The Builder.

VOL. LIV. No. 2354. SATURDAY, MARCH 17, 1888.

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Irish Fishery Legislation.

THE piecemeal legislation by which the great fishing industry has been carried on in Ireland during the last forty years has not produced works of the value of the expenditure, and the Second Report of the Royal Commission on Irish Public Works, which was appointed in October, 1886, now deals with the question of fishery harbours, and the means of overland communication with the towns: arterial drainage having been reported upon last year.

In the present Report the Commissioners recommend attention to railways as well as to improved means of carrying on the fishing industry by providing harbours for fishing-boats, and for general utility, upon which they propose an expenditure from the taxes of 400,000*l.* during the next ten years, and recommend, besides, that the existing funds be reconstituted so as to afford other useful assistance to that industry. The fish inhabiting the Irish waters are soles, plaice, turbot, flounders, skate (all flat fish), and cod, haddock, whiting, ling, hake, and pollock. The migratory fish taken are mackerel and herrings. The mackerel come in early spring, and the fishing season extends nearly to midsummer, with a second season in autumn. The season for herrings begins at midsummer, and continues for three or four months, the best districts for them being off the east and south-east coasts. For mackerel, the boats work principally to the west of Kinsale, on the south coast, and off the southern half of the west coast. The permanent inhabitants of the Irish waters, whether flat fish or others, are or might be taken throughout the year. The number of Irishmen wholly engaged in fishing with decked boats that are capable of going anywhere is but little more than 4,000; but 15,000 others are also engaged in it at times who are mostly occupiers of small agricultural holdings along the sea coast, and these people fish mostly from open boats within a short distance from the shore. Of the boats used in the Irish deep-sea fishing, those of the first class, which are over 30 ft. length of keel, number only 600 for the whole of Ireland, and of these not less than 500 belong to Dublin, Arklow Kinsale Baltimore, and the counties of Down and Louth, which, altogether, cover but a small proportion of the whole coast. The boats between 18 ft. and 30 ft. keel number 3,000, and most of the Irish fishermen use small undecked sailing-boats or row-boats of various sizes, down even to the primitive curragh, made of tarred canvas stretched on a framework of wood. There are no fish-curing establishments in Ireland, and although there is plenty of fish round the coast, a vast quantity of cured fish is brought into the country which might be all caught there and cured if there were means for it. When the take of herrings or mackerel is abundant no adequate market exists at the time for the fresh fish, and great waste results.

Grants of money from the taxes, superseding the former system of bounties on fish, began in 1846, when, by an Act of that year, power was given to Government to make a payment of 5,000*l.* as a maximum at any one place for a fishery pier or a harbour, or three-fourths of the cost, if that were less than 5,000*l.*, the other fourth part being charged upon the resources of the locality, either the county, the district, or the proprietors of adjacent lands, according to which of these interests would receive most benefit. The initiative in making application for this assistance by Government was left to the local persons interested, the works being carried out by the Board of Works, this Board maintaining them out of the tolls received for their use; but in 1853 the duty of maintenance was transferred to the grand juries of the counties in which the works lay, although the works continued to be constructed according to the designs of the Board of Works and under their direction in detail. In the year 1866 the amount of a grant for any one place was increased to 7,500*l.*, which implied, with the local one-fourth, an outlay of 10,000*l.* This continued to be the maximum amount granted by Government until 1876, when the rule was broken through at Ardglass, and at Kinsale in 1880, and at Arklow in 1882.

In the year 1883 the "Sea Fisheries" Act assigned 250,000*l.* out of the Irish Church Fund to be spent during five years on the construction of fishery piers and harbours, the previous rule of a limited maximum being suspended in this case, as it was also in the case of 45,000*l.* voted by Parliament in 1880 and subsequent years under the Relief of Distress Amendment Act of that year. But with all this expenditure the Irish fishing industry has declined during the last forty years. According to the evidence produced before the Commissioners, there were, in 1846, 19,883 vessels and boats employed, manned by 113,073 men and boys; whereas in 1886 only 5,683 vessels and boats were employed, manned by 21,482 men and boys; and these are chiefly employed on the east and south coasts. How may this be accounted for? The Commissioners quote in their Report the evidence of Sir Thomas Brady to the effect that formerly Irishmen knew all the fishing grounds round the coast, and how to sail vessels, but that they have died out, and the present generation have got into a system of fishing from open boats within a short distance from the shore; but that there is plenty of fish at a distance of fifteen or twenty miles from land, and when they go there, as they sometimes do, they are loaded with fish in a few hours; but the boats they use now are not fit to go out to this distance.

It would be, however, a little surprising if it could be supposed that the Commissioners adduce this as a probable reason for the great decline of the fishing industry of Ireland. A more likely one is that which is displayed in their description of the system of management of affairs in general. For instance, at the beginning, in 1846, the fishery piers were limited to an expenditure of 5,000*l.* on any one work, wherever it might be wanted or whatever the difficulty of construction might be; and under these restrictions the engineers of the Board of Works had to build fishery piers or other works where they were required by the local persons interested, without having had any opportunity of approving or amending the site.

Then, in 1869 a Fishery Board was instituted to advise the Board of Works on the receipts for and the advantage to be derived from any work proposed to be carried out under the provisions of the Act of 1846. But, although the Act of 1869 gave the Fishery Board only general duty of advising the Board of Works when requested to do so, the first-named Board has gradually come to exercise the duties imposed upon the other one, except those of preparing details of design and of executing the works when approved, which alone have remained with the Board of Works,—the Engineering Department of Government in Ireland; and in recent years the main responsibility for the policy and administration in regard to the provision of fishery piers has rested with the Fishery Board, for the Act of 1883 gave to this Board the right to criticise the actual designs prepared by the Board of Works; and

the Commissioners now draw special attention to the unfortunate results of this division of responsibility between two departments, the Fishery Board being primarily responsible for the selection of localities where piers and harbours should be constructed, and for the sum spent at each place, the Board of Works having charge of their design and execution, and the grand juries having the duty of maintaining the works when complete, through their officers,—the County Surveyors. No one of these three bodies has control over the decisions or actions of any other, and while the two first-named are departments of Government, the third is an independent local authority.

The evils of the division of responsibility between these two Government Departments were attempted to be remedied in the Act of 1883, by giving power to the Fishery Board to object to the engineering details proposed by the Board of Works, but the sketch plans sent in by this Board admitted of no useful criticism. When, however, complaint was made, these sketch plans were declared to be in as full detail as could be given at that stage of the discussion. The Act of 1883 seems difficult to read plainly, for Mr. Blake, the late Chairman of the Fishery Board, held that under it the Board of Works might veto any proposal of the Fishery Board if they should see fit to do so, while Colonel Nolan, his successor, considers that that Board has no such power. Mr. Manning, the engineer to the Board of Works, in his evidence explained that in his own opinion the sole responsibility for the expenditure under the Act of 1883 rests with that Board; but his view was overruled within his own department, and a contrary one adopted. The Commissioners do not attempt to reconcile these conflicting views, but they record their opinion that the Board ought to have insisted that works which would have to be carried out under its orders were properly considered in point of locality as well as of general design; and that the Board should have formally objected to undertake any work which did not satisfy this condition from the beginning. The result has been that sites have been selected, estimates made, and the amount of money to be expended settled, without any competent engineering advice, and without any proper certainty that the sums spent would produce any valuable result.

The main drift of the recommendations of the Commissioners is that large works should be constructed, which would, of course, necessarily mean few in number, such that at low water there may be a depth of 12 ft. at the pierhead, or as nearly so as possible, having regard to the requirement of a large area for the movements of vessels of large size; that aid should be given primarily towards encouraging professional fishing, with decked boats of considerable size; that the two funds now at command for general purposes of the fishing industry should be combined, and the whole applied to sea fishery. It is only the residue, if any, of these funds which might remain after satisfying the requirements of the few large establishments which the Commissioners would give in aid of the fishing which is conducted in smaller sailing-boats, row-boats, or canoes,—the sort of fishing which is carried on by men whose whole time is not devoted to it, but who occupy portions of land, on the produce of which they partly live.

Nevertheless, the late Mr. Blake, whose knowledge of and interest in this subject the Commissioners admit are well known, gave evidence to the effect that "The fishing of Ireland for the most part can only be conducted by such people [as those above named], for this reason: it is the most tempestuous coast, perhaps, in the whole world, especially the west coast, and very often for weeks together boats, no matter how well constructed or what size, could not attempt to go to sea. The small farmer, then, upon those parts of the coast, with his small boat will watch for a favourable opportunity of getting some five or six hours' fishing. He launches his little craft, and goes out and brings home whatever quantity of fish he can capture. He knows pretty well what the indications of bad weather are, and he comes in before the storm can overtake him." And Colonel Nolan, M.P., who succeeded Mr. Blake as chairman of the Fishery Board, said:—"Supposing we had built, as has been suggested, two harbours in Connemara, there is no concentrated fishing population in Connemara, but it is scattered over every bit of that coast,—at any rate, until you come near to Clifden. We should have left this population without small harbours for their ordinary boats to put up at, and should have built two magnificent harbours for a class of boats of which there is not one."

Still, if railways are provided in connexion with the large harbours, even these witnesses would prefer the deeper water.

Does it not, then, seem that the Commissioners, in making this recommendation of large harbours, overlook the fact that while large sums of money are being spent at a few places in creating a great trade for somebody, the Irishman himself is left out of consideration? Scotland is too often referred to in the Report, as if it were desired that Scotch predilections should take the place of those of the native people. It is not good and useful legislation to endeavour to introduce incongruous habits and customs amongst any people.

THE ARTISTIC SPIRIT IN MANUFACTURE.*

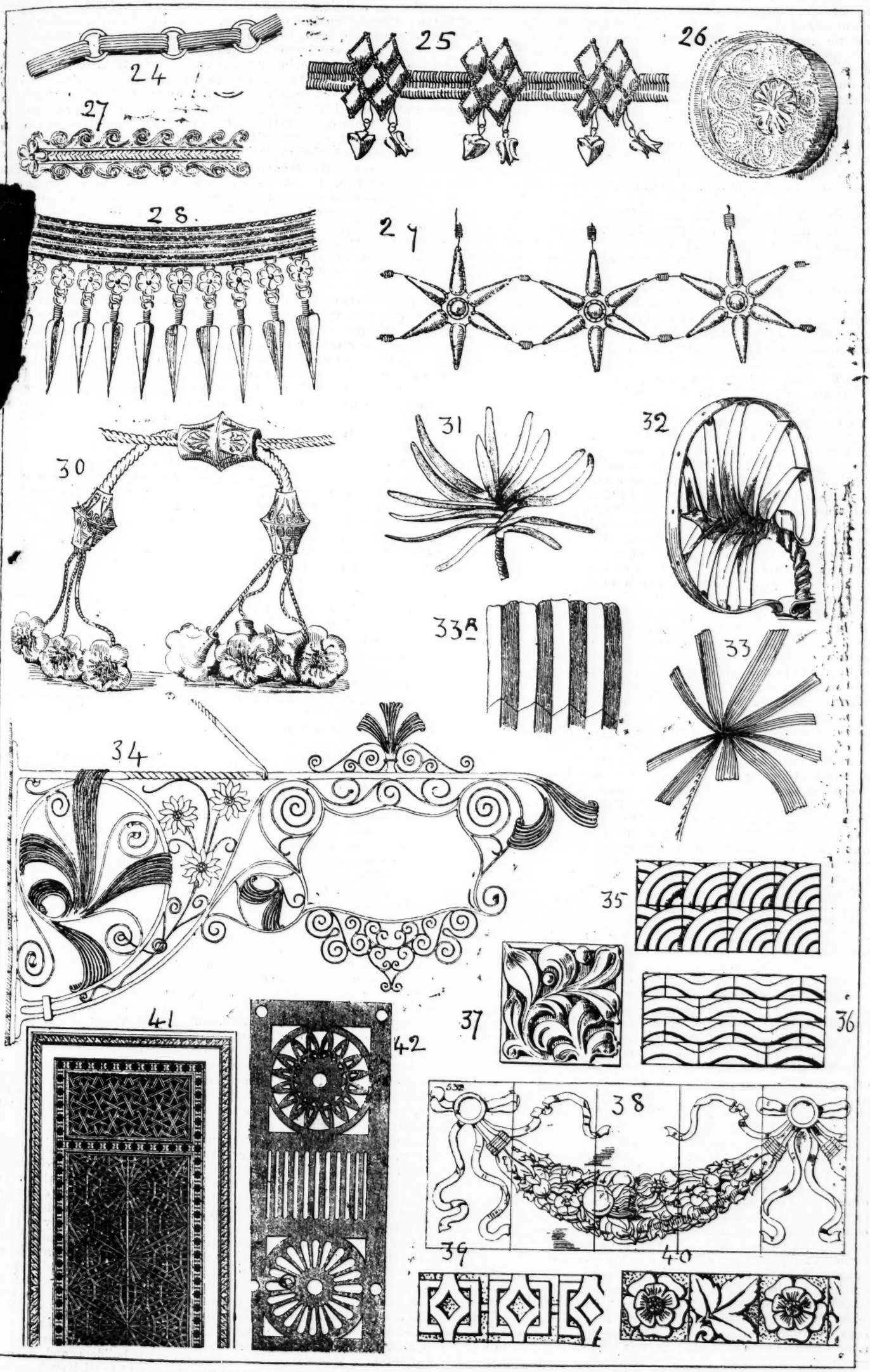
BY H. H. STATHAM.

CONTINUING for a moment the subject of artistic treatment of very simple articles, I would instance the very plain and unpretending design for a silver watch-chain, a small bit of which is sketched in fig. 24. Simple as that is, the man who made it, whoever he was (I picked it up by chance from among the usual mass of commonplace things of the kind that are sold in our shops), had a feeling for design and for the way to treat silver in that form. The long flat links and the plain circular ones alternating with them illustrate that feeling for the employment of dual contrasted forms which runs through so much of the best schools of ornamental design; the ribbed treatment of the long links emphasises their length and gives nerve, so to speak, to them. In attempting (unsuccessfully) to procure another edition of the same pattern, I had an instructive insight into the utter artistic barrenness of the plainer silversmith's work of the day. Nothing could be shown anywhere but the most commonplace imitations of chain cables in miniature; and in one shop, on trying to explain that I wanted something less commonplace and with a little design in it, I was immediately shown a chain made of imitation horse-shoes in miniature, and my contemptuous repudiation of this piece of vulgarity was met with the remark, in an injured tone, "You wanted a fancy article, and that is one." That is all the ordinary English dealer can understand when you ask for something artistic,—you are supposed to want a "fancy article," which usually means an imitation in miniature of something else originally made for a totally different purpose.

The case is even worse when we come to gold work, insomuch as the abuse of so beautiful, durable, and precious a material as gold is even more to be lamented than the abuse of silver. From the articles offered for sale in the general run of jewellers' shops, it would seem that the idea is that, gold being a costly material, the value of a gold ornament consists in the amount of the precious metal put into it, in its bullion value, so to speak; and bracelets, earrings, and brooches of this material are made in thick lumps of the precious metal, as if taste and beauty were to be measured by the bulk of gold included in one ornament. Now the leading characteristics of gold, besides its costliness, are its durability, its fine surface and lustre, and its remarkable ductility, and capability of being beaten out thin without injury to its lasting qualities. See how thoroughly the Greek artists understood all this. Figures 25 to 30 are sketches of ornamental work from the gold room in the British Museum. In every one of these the metal is used as thin as it can well be used; the object of the Greek artist was to produce his effect with as little, not with as much, gold as possible, and always in a manner suitable to the nature of the material. In fig. 28, for instance, the long pendants, instead of being made solid, are beaten out into a section forming three thin slips of the metal, arranged on the basis of a triangle; these long forms are admirably contrasted with the rosettes immediately under the band of the necklace, and each leaf of these little rosettes is separately *repoussé*, the whole forming an object almost as delicate as a natural flower; and, indeed, which has drawing Greek gold work is the only thi[ng]; and so in regard to works of art, which rather remin[d] one of drawing flowers. The band itself [is] formed of a series of little woven braids of thi[n] gold wire, a work of the greatest delicacy an[d] patience. Fig. 25, also part of a necklace (shown a little larger than the original), is [a] remarkable bit of work in several ways. One thing to be observed in it is the entire freedom from the conventional idea of symmetry. The two little pendants to each division are dissimilar; the larger form above them is composed of five diamond-shaped members, also arranged with an escape from symmetry, the one side showing an external, the other an internal angle; each of these diamonds is a thin plate beaten up into a slightly convex form, and divided by a row of very minute beading, with a large bead at the intersections. This work, very inadequately conveyed in the sketch, is so minute that I asked Mr. Murray to let me have it out and examine it with a magnifying glass, and on taking it out for that purpose we found that the back of these diamond panels was all filled with coloured enamels, though these could never be seen in the usual fashion of wearing the necklace; they were done apparently from the pure pleasure of making the thing as perfect as possible. Fig. 26, about the real size, is a small toilet saucer apparently, made of the thinnest metal, with a delicately-designed ornament of scroll-work on the bottom of it, picked out by a thousand little dots of a minute punch. Fig. 29 has the same general character in detail as fig. 25, and observe in what a light, airy, gossamer fashion the separate stars are connected together, swinging at the end of little threads, twisted in the middle into a minute spiral to give something for the eye to rest upon between the points of the starlike figures. Fig. 30, which is the centre pendant of a necklace, is really almost like a knot of flowers, so delicate and minute is the work, but the flower forms are sufficiently conventionalised to escape the charge of realism; the bosses are covered with very small and delicate ornament in relief. Let any one, after studying such work as this, turn to the kind of thing which is offered as gold work in most of our shops, of which there are terrible examples in the gold work which was purchased from the Bingley Hall Exhibition, near Birmingham, two years ago, and placed, with a fine sense of irony, in the Corporation Art Museum: bracelets of thick plates of gold, with some device stuck on in the middle; studs formed of plate gold, with niches cut in it at symmetrical distances for ornament; and so on. These are not worse or better than much else which is to be seen in goldsmiths' establishments everywhere. It is perhaps difficult for those who have been reared on this kind of bullion gold work to understand how absolutely repulsive it is to any one coming to it after the study of Greek goldsmith's work; to learn to understand that is, however, the first and necessary step towards designing and accomplishing something better.

From gold work we may pass naturally to work in another metal, iron, almost the typical material of the age, and in which an immense amount of work is now being done, decorative and otherwise. Of the largest works of the day in iron it is difficult to say whether they either are or ought to attempt to be artistic in the usual sense of the word. There are at this moment in progress the two largest constructions in iron that have ever been attempted;

* A lecture delivered at the Midland Institute, Birmingham; continued from page 171, *ante*.



Sketches in Illustration of Paper on "The Artistic Spirit in Manufacture."

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the Eiffel Tower at Paris, and the bridge over the Firth of Forth. The Eiffel Tower is to be about 900 ft. in height, and is entirely without artistic pretentions of any kind; more than this, it has been designed without the sense of scale, and nobody seeing a drawing of it would ever conjecture its height apart from direct information. It is a foolish piece of work, ugly and ill-proportioned, and of no real use to any one. The Forth Bridge comes under a different category. It is a work of usefulness, also on an enormous scale; a gigantic trestle bridge, in which the trestles are great tubes of steel, of 9 ft. to 12 ft. diameter, and in which a construction of such tubes and tension girders is being built out horizontally into the air to a length of nearly 700 ft. on each side of the main piers.* This enormous erection has been stigmatised as very ugly; it is certainly, like the Eiffel Tower, deficient in indication of scale, and it is impossible to form an adequate idea of its size except by close inspection. But in regard to the question of ugliness, it is a piece of unadorned and naked construction, and it has the beauty and expressiveness of naked construction of a scientific stamp. Would it have been possible to give it anything more than this? I am inclined to think not. The main lines of the construction you cannot alter, whether they are thought beautiful or otherwise; they are all the result of closely-calculated scientific requirements. Any feature added to the design for reasons of purely artistic expressiveness would, in a work on such an immense scale, bring serious additions to an expense already enormous, and probably add weight to a structure in regard to which the weight and strength of every portion has been the subject of careful and exhaustive calculation. In the case of such a structure as this, the problem is to do the work at all. Decorative treatment is almost out of the question, and it is exceedingly likely that an attempt at anything of the kind would have resulted in a contradiction or masking of the real constructive system of the viaduct. Certainly this has been the case in another very large iron construction, a roof of 170 ft. span, in which the engineer to whom it was entrusted employed a new and very admirable method of vertical support for his roof principals. This was a fish-shaped column, with a rounded end at top and bottom, fitting into sockets in the base and in the foot of the roof principal, so that the column could move freely with the expansion and contraction of the roof. This was not only a very clever and novel piece of construction, but it had, as I first saw it when the roof was in progress, a very elegant and original effect. I was saying as much to the engineer who designed the roof, when he replied, "Oh, it will not look like that,—the capital is not on yet." "Why, good heavens!" I said, "what do you want a capital on it for?" "Oh," was the reply, "people would never stand it without a capital, they would think there was something wrong; and the architect, too, says it must have one." I preached so to my engineer friend that I believe I converted him,—at least, he said so; but the capitals,—cast-iron Corinthian capitals in orthodox form,—were already made, and were fitted on round the tops of the fish-shaped columns, concealing thus a piece of real originality in design arising naturally out of construction, in order to imitate a feature which was not only not wanted, but was a considerable extra trouble and cost to fit on to the real construction! The very force of absurdity could go no further than this.

This misuse of iron in pretended forms borrowed from other branches of work is, of course, quite common in work on a small scale also, though it does not appeal to one's sense of the ludicrous and disproportionate quite so strongly on a small scale. One of the most curious examples I have ever seen is in the iron balustrades to the circular stairs leading to the galleries in the Art Museum at Birmingham. These are of cast iron, but as this is an "Art-Museum," and as there has been a general conviction spread of late that wrought iron is a more artistic form of work than cast iron, it seems to have occurred to whoever was concerned in making these that an artistic *cachet* could be imparted to the pattern by an imitation of wrought-iron construction, and so where the curves join there is a square lump cast, as if to represent the strap by which in wrought-iron work two such pieces would be held together. This is, perhaps, quite as good as the case of the capital above mentioned: it would be difficult to imagine a more complete *reductio ad absurdum* of the vanity of trying to be "artistic" by imitating something foreign to the material. As to the general question of the possibility of artistic character in cast iron, this may certainly be attained to some extent, but it must be by the careful avoidance of any attempt at the higher class of decorative design, which requires better work than can be done in casting, and by keeping to simple forms with low relief. It is possible in this way to give a little effect to articles which, for commercial reasons, must be produced in cast iron, while avoiding the failure, and even vulgarity, which necessarily result from the attempt to do more than the process of ordinary casting is capable of doing well. In regard to wrought iron, which is so ductile and capable of varied and expressive treatment, there is no doubt a great deal of good work done now in this material. The two temptations to which people are led, without the study of good examples, are to displays of what may be called mere *cleverness*, and to a too great realism in the imitation of natural forms. There are some painful examples of this in the cases of wrought-iron work bought by the Corporation of Birmingham from the Bingley Hall Exhibition, and now made a portion of the Art Museum treasures, though they are in reality only proofs of the want of artistic perception on the part of those who made and those who purchased them as examples. Candelabra ingeniously worked in spirals; festoons of realistic foliage; brass vases with wrought-iron ivy sprigs trailed round them,—all these things belong to mere trickery and clever manipulation, but not to art. The temptation to go into minute imitation of natural foliage in wrought-iron is, of course, as has been observed, very great; and we may see occasionally really delicate manipulation and modelling carried out in work which is realistic in all its details, and only conventionalised so far as its arrangement in some regularly designed curve: but however we may admire the patience and care of the workmanship, the thing must be more or less a failure, because, bestow what care and finish the workman will, the result must always be something far short of the delicacy of actual foliage; and, moreover, the contrast between the hard spikey character of the iron foliage and the associations of softness and fragility which belong to real foliage, always produces a jarring sense of discrepancy between the thing represented and the kind of material in which the representation is made. Far superior in good taste and effectiveness and expression of the nature of the material, is some of the wrought-iron grille work of the Renaissance period, in which simple straps of wrought iron are bent and twisted into rich and complex patterns, with no imitation of anything whatever, except bent pieces of metal. This is not to say, however, that no suggestion should be taken from natural forms for metal work. The point is to make use of nature, not for imitation, but for suggestions of new designs to be worked out in wrought-iron character. Of this kind of suggestion from nature there is, in fact, not enough, the tendency being, in conventionalised imitations, to follow some recognised patterns, chiefly of Mediæval character. Here, again, comes in the desirability of bringing forward the individual workman more, and encouraging him to exercise his own taste and invention, among other things, in taking his own hints from nature and conventionalising them in his own way. There are multitudinous forms in nature which have never been used or looked at with this object, yet which are full of suggestions. One or two examples are given rather suggesting the direction in which this kind of study may go, than as particularly successful in themselves. Fig. 31 shows a sketch of a form of cactus, and 32 a conventionalising of the same in iron work (forming a portion only of a design for a grille); and figs. 33 and 34, similarly, another application from a tropical plant, characterised by long broad-tipped leaves with a ridge and furrow section, as show in fig. 33A. In both cases the aim is to take the leading qualities of the original, not to copy its mere form in any realistic way: thus the character of the cactus plant shown is that the leaves are fitted one within another at the springing, and flattened at the tip, and they *tend* to grow a good deal on the same plane, but not precisely. These facts of growth, form, and construction are generalised in the conventional imitation, as also the roughened and ridged stem, which has its recognition in a conventional form; and so with the other example. Now, if the individual worker in metal was encouraged to think for himself and given credit for his own work, one result would probably be that if you gave fifty such men the two plant forms sketched in figs. 31 and 33, and told each to give his own rendering of the character of that example in wrought iron, not imitating it, but suiting the treatment of it to the nature of his material, you would probably get fifty different designs, all original, and some of them no doubt much better than these, which are merely given as showing my meaning. As it is, most of the same men are now engaged in copying Mediæval forms, of course with a very limited degree of originality.

Architectural detail furnishes some instructive hints as to the question of the manufacture of ornament. Architecture is, in fact, the great central manufacture art, around which all the other manufacture is collected. Now, there has come up lately a great fancy for ornamental brickwork,—a demand which is supplied in part by the manufacture of ornamental bricks wholesale. Now, in regard to such simple forms as shown in 35 and 36 (taken from a well-known catalogue of brickwork, very good of its kind), it is quite allowable to turn out these wholesale as castings; these are mere wall-diapers to break up a surface: they are both good for the purpose, and have a certain amount of character; but they are hardly such things as it would be worth while to carve separately. The case is different in regard to such work as the panel, fig. 37. This is a good bit of conventional foliage design in itself, and if it were a carving; but being only a cast panel, when you begin to repeat a thing of that kind in rows it becomes a vulgarity at once; it simulates carving, to begin with, which is a kind of small deceit; but the important point is that any treatment of foliage forms in ornament in that free manner should be in each case a separate act of design; it then has interest and character; repeated mechanically, it becomes a mere pretence of an artistic thought, which has only been given really to the one original panel of which the others are repetitions; and the nearer to natural life and growth is such ornament, the more offensive becomes its mechanical repetition. Fig. 39 is bad, not on account of its mechanical repetition, for it is not worth carving, but merely because it is a poor and characterless design; but fig. 40, with its feeble assumption of representing a natural flower and natural leaf repeated alternately, is an absolute offence to the mind. It is a degradation of the art of carved foliage into a mere mechanical repetition of coarse models; the flower and leaf having, moreover, no connexion whatever in the design (?). A still lower deep is reached in the mechanically repeated "swag" (fig. 38), of which patterns are kept ready to be built into the walls of houses. This kind of unmeaning ornament is bad enough when carved and varied in each instance more or less; deliberately to put up these mechanically-made imitation festoons along the frieze of a building, merely because something must be put there, and it is too much trouble to invent anything, is bringing architectural ornament to about the lowest point it can be degraded to. Of course, the blame does not rest so much with the manufacturers who produce these things, as with the architects and builders and building-owners who are content to stick such wretched

* A sketch of the pier and cantilever of the Forth Bridge was given on the black board.

rubbish on the walls, and call it ornament.

A great deal of the feebleness of this kind of ornament arises from the total want of trouble or thought over its production; and in fact the taking of great pains, both in design and execution, is one of the characteristics of the artistic spirit. Nothing done with no trouble is likely to be worth much. As an example of the contrast, look at the two pierced panels, figs. 41 and 42. The former is a piece of Indian work; and though the setting out of these patterns is not so intricate a task as at first sight it appears, still it means care in setting out and great elaboration and labour in execution, and a proportionately rich effect is the result. Fig. 42 is a perforated brass door-plate, a "pattern-book" design (?) of English origin. It would be difficult to exaggerate the imbecility of this production. The Indian panel is a piece of work elaborated with the desire to produce a rich decorative effect, and a kind of pleasure in the elaboration of the geometric pattern. The doorplate is the production of some one who was told to make a new pattern, and so, because he must do something, proceeds to cut out something like the sections of two cog-wheels one within another, and a round hole in the middle, and then some parallel slits underneath. Better the plainest bit of brass than this foolish pretence at producing a "design" without thought, invention, or character. Here, as elsewhere, the artistic spirit means individual thought and individual labour, entered into for pleasure and interest in the work, and the desire to produce something that shall be, if the maker can accomplish it, the best of its kind. Anything short of that is, like so much of our contemporary architecture, mere pattern-making.

NOTES.

SIGNOR LUCA BELTRAMI, of Milan, has reprinted in pamphlet form his notes, contributed to the *Raccolta Milanese* of December and January last, on two unedited drawings of the cathedral at Milan, recently discovered in the archives of the Church of St. Petronio at Bologna. These drawings are, it is confidently asserted, from the hand of the architect Antonio De Vincenti, who was appointed architect for the Church of St. Petronio by the Council of Six Hundred, on the 26th of February, 1390. The drawings, which are reproduced in *fac-simile*, consist of a sketch of the ground-plan of the chancel, transepts, and a portion of the nave, showing the vaulting, and a perspective sketch and elevation of a portion of the exterior of Milan cathedral. It is suggested by Signor Beltrami that these sketches were made by De Vincenti from the cathedral in the year 1390 (the building of which had only been commenced four years previously), to assist him in preparing the design for the Church of St. Petronio. The plan is incomplete, although the outer walls of the nave are continued to the margin of the paper, and only includes five bays of the nave. It is conjectured from this circumstance that the eastern portion of the cathedral was commenced before the position of the west front had been decided upon. Signor Beltrami inclines to the opinion that the sketch-plan confirms the assumption of Sig. Gentile Pagani that the old west front, constructed in 1353, was erected on the line of the sixth bay and not on that of the third bay, as is popularly supposed, and asserts that the front erected on the latter line, which remained until the year 1682, was a sham front, built of the fragments of the original west front, which was demolished in 1489. In the sketch of the exterior of the cathedral, which is on the back of the plan, and is partly geometrical and partly in perspective, Signor Beltrami professes to find indications that the design for the cathedral was completely developed as early as 1390, and a confirmation of his conjectures with regard to the character of the original design. It is to be noted that the dimensions on the plan are in Bolognese feet and those on the elevation are in Milanese bracchia, from which circumstance Signor Beltrami infers that the plan was drawn from actual admeasurement on the spot, while the elevation was partly taken from drawings.

ON the Committee stage of the Railway and Canal Traffic Bill, which was reached on Tuesday, Lord Jersey gained his point, the House of Lords deciding to absolutely prohibit railway companies from giving preferential rates in favour of foreign goods. The opinion expressed by us last week (p. 172, *ante*),—that the defeat sustained on a former occasion was greatly due to a desire not to wreck the Bill,—is thereby confirmed, sixty-nine peers voting for the amendment on Tuesday as compared with forty-five at the previous division. Both Lord Stanley of Preston and the Marquis of Salisbury expressed full sympathy with Lord Jersey's views, and a firm conviction that the Bill as drafted was exactly what was required to deal with the evils he complained of, and that the remedy would be found in no other way. The Government, no doubt, found it very difficult to adjust this matter, and, having given a great deal of consideration to it, were naturally disinclined to admit that they had failed to find the proper remedy. Some very powerful arguments were adduced on both sides, and the amendment eventually carried provides "that in the adjustment of the rates and charges of a railway company no difference shall be made in the treatment of British merchandise and foreign merchandise." This is clear and unmistakable, putting into a nutshell what the Government profess to be the design of the Bill, and which nothing but plain language like this is calculated to secure. Lord Stanley urged that persons dealing in large quantities and at regular intervals ought to be allowed advantages over those who did not deal in such large quantities and so regularly. It appears to us that special advantages on such grounds are quite distinct from "difference in treatment of British and foreign merchandise founded on the place of origin of the goods," and that the acceptance of Lord Jersey's amendment would not preclude railway companies from offering special rates under special circumstances, while it *would* preclude the importer from having the monopoly of such benefits. A discussion also took place on the "terminals" question, but the clause was not altered.

A SPECIAL general meeting of the Royal Institute of British Architects is to be held on Thursday, the 22nd, at eight p.m., to consider the draft of a petition to the House of Commons against the Architects Registration Bill, brought forward by the self-constituted Society of Architects. We may observe that by the terms of this Bill all members of this "Society of Architects" are to be *ipso facto* entitled to register as architects. The Society includes among its list of members persons who are known not to be architects at all; a fact which is conclusive as to the *bona fides* and public spirit of the measure.

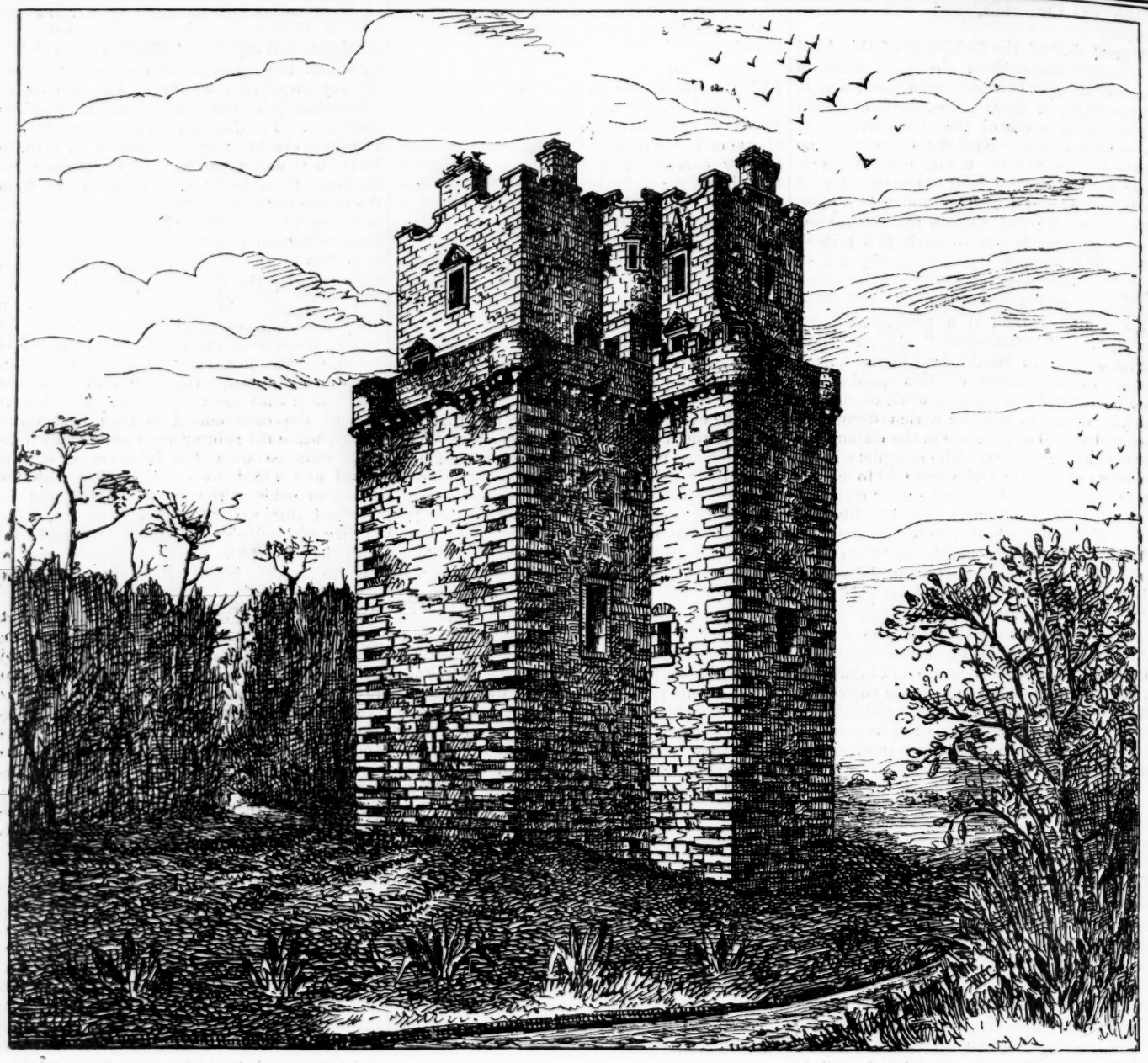
IN the case of the Liverpool Household Stores Association *v.* Smith, in the current number of the *Law Reports*, the Court of Appeal has laid down a rule very necessary for the purpose of genuine and fair criticism of business projects. They were asked to grant an injunction to prevent the publication in the future of alleged libellous statements. They refused to do so, because "it would be very unadvisable to grant any injunction which would restrain fair discussion in the newspapers of matters of importance like that of the probable success or failure of a public company. Of course, if anything libellous is published in the newspaper, there will be a right of action against the proprietors, and they will be answerable." These few words really constitute a strong protection to the public; if injunctions could be obtained to restrain assumed and future libels, no bogus company would ever be exposed; comment on public men, and on numerous important transactions, would have to run the gauntlet of the law courts.

AN invention, just patented by Mr. Maurice C. Williams, is likely to prove useful to architects and others. A diagram is employed by which the centrolinead can be at once set for any required distance of vanishing-point without adopting the tentative method hitherto necessary. The diagram gives a range for the vanishing-point varying from 1 ft. 3 in. to 30 ft., with a distance between the studs varying from 12 in. to 20 in. The distances from the centre of the centrolinead to the vanishing-point are represented by radial lines, and arcs are struck from a centre at the middle of the base line of the instrument across the radial lines denoting the distance apart of the studs. The arcs and radial lines, together with a centre and base line, form the protractor. In setting the centrolinead, it is only required to lay it on the protractor so that the shorter arms coincide with the base line, and the longer arm with the centre line. The longer arm of the centrolinead is then held down firmly, while the shorter arms are moved until they coincide with the intersection of the radial and arc lines corresponding with the distances apart of the studs adopted, and the required distance of vanishing-point. The facility with which the centrolinead can be set with the use of the above protractor enables us to recommend it as a time-saving instrument.

MESSRS. MANSELL, of Oxford-street, have on view a large series of photographs of French architecture of all dates, made by M. Mieusement on the Commission of the Ministére des Beaux Arts, mainly for the use of the École des Beaux Arts. The photographs are very good, and the collection is a very large and typical one, and gives the opportunity for securing many illustrations of French Romanesque and Gothic architecture at a low price. The collection includes also a good many photographs of subjects in the comparative museum of sculpture recently formed in the Trocadéro.

WE gave an illustration some little time since of the picturesque and interesting manor-house of Ockwells, near Maidenhead. We learn from Mr. Slingsby-Stallwood, of Reading, that the Berkshire Archæological and Architectural Society are desirous of collecting funds for the repair and preservation of those portions of the building which are in need of repair, with the object rather of arresting decay than of attempting anything like restoration. The present lessee is entirely in favour of the action of the Society, but there does not seem much probability of the requisite funds being subscribed in the immediate neighbourhood, and the Berkshire Society, of which we believe Mr. Slingsby-Stallwood is the hon. secretary, are appealing for further assistance. It is understood that 500*l.* would do all that is necessary to put the hall and porch in a state of good repair.

THE title, "Around London," given to the collection of drawings by Mr. F. S. Cotman, which are exhibited at Messrs. Dowdeswell's gallery in New Bond-street, is rather misleading, conveying the impression that the drawings represent a set of studies of the environs of London, a kind of collection which would have had a special interest; whereas there is nothing of the kind,—only a series of sketches of which few are in the neighbourhood of London (as at Harrow and Pinner), others in Norfolk. Mr. Cotman has a style of his own, and represents with effect and feeling for local colour such scenes as "Pinner" village (37), "Rainham-street" (22), and the old white church at "Morston, Norfolk" (44). "The Meadow Walk at Harrow" is one of the best of those in which buildings are not prominent, and is a fine representation of masses of foliage treated in a broad manner and with rich colour. In some others of the drawings the treatment of trees is so exceedingly rough and without any suggestion of detailed forms that one can hardly recognise the intention to represent trees; they suggest the idea that the artist has been trying the old Greek's *extempore* receipt for painting by throwing his brushes at the paper.



Preston Tower, East Lothian—From a Sketch by Mr. Walter F. Lyon.

WE have been asked by Messrs. Singer & Sons to look at some examples of bronze and iron decorative work cast by the *cire perdue* process (not "perdu," Messrs. Singer!), which has hitherto been mainly employed for figure casting. The difference in an artistic sense from ordinary ornamental castings is that objects can be modelled and cast with much more delicacy and finish of detail than by the ordinary system of casting in sand from wooden patterns, and that each casting is a separate design, there being no possibility of making more than one cast from the same model. The work we saw consists mainly of metal vases, with floral subjects modelled on them, of a rather too realistic character for metal, but undoubtedly modelled and produced with great delicacy of detail, and with an effect and texture quite different from ordinary casting. Some vases with animal forms modelled on them were more to our mind than the naturalistic groups of flowers. The experiment is an interesting one, but there is rather a danger of its being laid hold of as a means of wholesale realistic modelling, which is, after all, not the kind of work we want in metal. The modelling of decorative animal forms by this process, of course, is only another application of the process to bronze sculpture on a small scale, and is quite suitable to the process and material; and probably well-modelled and artistic animal sculpture in bronze, as a decorative adjunct, can be produced by this means more perfectly and at less cost than by *repoussé* work and tooling. In the case of purely decorative design, however, we should rather expect to find that the *cire perdue* process, as it allows of no repetition like ordinary casting, would, on the whole be as costly as *repoussé* work, and not quite so effective.

PRESTON TOWER, EAST LOTHIAN.

THIS interesting building, of which we give measured drawings, may be taken as a typical examp'e of a Scottish castle of the second class. It will be seen at a glance that the portion below the parapet corbels is in a totally different style to that above this point. The former is a good example of a tower house of the fifteenth century, the latter being additions of a much later date.

The plan consists of a one-roomed block with a smaller wing projection at the end in the form of the letter L, a development in planning from the simple quadrilateral of an earlier type, which in the sixteenth century further developed by the addition of a square or round stair turret in the re-entering angle, which last continued a very favourite arrangement far into the seventeenth century.

The basement, as was usual, consists of one vaulted apartment, about 20 ft. by 15 ft., having no communication with the floors above except by a trap in the vault, used for raising stores and other requisites; this basement was used for stores, housing of cattle in emergency, &c. The vaulted roof is 15 ft. in height, and has been divided by a floor laid upon the corbels, which still remain, and was used as sleeping accommodation for the servants and dependents of the family.

On a level with this basement, but entirely cut off from it by a 7 ft. wall, is the dungeon, a dark and dismal place, about 8 ft. square, with a vaulted roof, in which is a small trap or man-hole, the only entrance, and through which the unlucky prisoner was lowered. No light penetrates into this prison; there are a few holes for ventilation and a little recess 1 ft. square, 3 ft. from the floor, perhaps used to place the inmate's meals on. In one corner there is a sink-like object, which is built up to about 2 ft. from the floor, and looks like a lavatory or a gardrobe; it has a stone pipe of 7 in. diameter leading downwards in the thickness of the wall, and which in the excavations made last summer was found to lead into the main drain shown on the plan. Assuming it to be old, it is difficult to assign to it any use, as the pipe is too small for soil without the aid of a good flush of water, a luxury hardly to be expected in such a place. It is more reasonable to put it down to the more cheerful purposes of whisky distilling, to which utilitarian uses the lower part of the tower was put at the end of the last century, and at which time a rough communication was broken through between the dungeon and the larger vault.

The principal floor is in one hall, about 23 ft. by 17 ft., covered with a semicircular vault 18 ft. in height; it has wide splayed windows, enlarged in later years. In the summer of 1887 the remains of the fireplace were exposed by removing the plaster; it was then found that the hood moulding and carved capitals of good fifteenth-century Gothic had been ruthlessly hacked away during some later alterations. The lord's private room is in the projecting wing connected with the hall by a passage in the 6-ft. wall, which passage also contains a flight of steps descending to an entresol chamber which lies below the private room and above the dungeon, the stair being bridged over

by a sort of drawbridge of wood, a curious and wholly unique arrangement, doubtless adopted to economise space; this private room has a trap in the floor placed over the one in the floor of the entresol below. By reference to the drawings this most interesting series of apartments will be more readily understood.

The hall was the principal room in the house, serving the purposes of general living-room, and in earlier times for cooking and general mess-room as well; in later and more civilised times it was only used by the lord and his family. As has been said, the hall has no stair communication with the basement, and consequently served the purposes of an entrance-hall, the principal and original entrance doorway being on the east side, opposite the door to private room. Access from the ground, 15 ft. below, was gained by a movable ladder attached to a hoarding or wooden gallery covered by a lean-to roof, which was carried on the corbels which still remain. This gallery in later years was extended round the south-east angle to a new doorway which was made in the south side of the tower to allow of access to the stair without going through the hall, as was previously done from the original entrance. At the same time a new lobby passage was made in connexion with the stair, and the old door between stair and hall was built up; probably a wooden screen was placed across this new entrance where the trap is shown on the plan.

The circular stair in the south-east angle of the hall connects it with the upper floors, and finishes at the parapet walk.

There is little of interest in the floor above the hall, which was used, with the other upper floors, as sleeping apartments. There are small rooms above the private room, and off one of the connecting passages is placed a gardrobe, which has a drain in the thickness of the wall down to the main drain in the ground below.

The parapet which encircles the whole building is unfortunately all more or less modern, excepting at the north-western angle of the projecting wing, which is of good design, and has an original crenellated angle bartizan, now roofed in, and used as a closet; two very large corbels are placed at the level of the parapet for the defence of the principal doors of the tower, which are in a line below.

The later additions which terminate the building will be seen to be of the Classic character prevalent in Scotland in the seventeenth century, conspicuous in the window pediments and the parapet embrasures; the quaint stair-turret is also of this period, and leads to the flat roof, long since gone, and which must have commanded a magnificent view of the adjacent country and of the Firth of Forth, from which the castle lies about the distance of a mile.

The historical accounts of the castle are meagre. Sir Robert Hamilton, of Preston, seems to have been an important person in James III.'s time, and possibly built the older portion of the building. His ancestor, Sir John FitzGilbert Hamilton (son of Sir Gilbert de Hamilton, who flourished in Alexander II.'s time) acquired the estate, his elder brother Walter being progenitor of the Abercorn family. Various members of the family have from time to time distinguished themselves in public affairs, especially in the time of the Covenanters.

The castle was burnt and dismantled during Hertford's invasion in 1544; the date 1626, with the monograms and initials of Sir John Hamilton and his wife Katherine Howson were on the south side of the upper additions, which would point to that date as being the age of these additions but the initials of Sir Thomas Hamilton, who died 1672, and his third wife Rachel Burnet, are on the east side of the same work; it is therefore difficult to say by whom the additions were really made.

It is known to have been burnt by Cromwell in 1650, and again accidentally in 1663, when the charter-chest, with the family papers, was destroyed; we are inclined to put a date after this last burning as the age of the top additions. Sir Thomas died in 1672, and his son, Sir William, sold the property about 1681. The late Sir William Hamilton, the celebrated Professor of Logic and Metaphysics in the University of Edinburgh, being the then representative of the family, purchased the castle and grounds about it, and it is now in the possession of his son. About twenty years ago, when the writer of this article photographed the castle, he found it in almost every respect perfect, with the exception of the wood floors; but now the south and east walls of the top part are in a woeful shape of dilapidation, a melancholy result of neglecting the stitch in time that saves nine. A few archæological enthusiasts are now, by a few judicious and necessarily inexpensive repairs, endeavouring to save it from further destruction.

It may be added that a quaint pigeon-house, an invariable adjunct to a Scottish home, stands in the garden, tottering also to its fall; this, and the handsome pedimented gateway in the east enclosure wall were erected at the same time as the later additions.

Numerous interesting archæological remains lie within a gunshot of the castle, the principal being Northfield House, an excellent specimen of an early seventeenth-century house, bristling with pepper-pot turrets gracefully corbelled out from every angle of the building. Magdalines House adjoining, built 1628, shows very interesting peculiarities in detail and plan; and in the adjacent market garden, rising from amongst a forest of gooseberry bushes, stands the most complete market cross now left in Scotland, the last remains of Preston village, and where the honourable Corporation of Chapmen held their meetings. It stands on an octagonal base 15 ft. high, each side having Classic pilasters, arches, and shell tympanums, finished with an elegant parapet on a good corbel course, ornamented with gargoyles of twisted and fantastic design. Access is gained by a stair to the top, on which is placed the cross proper,—a shaft, oval in plan, and 16 ft. high, topped with a Classic capital and a royal unicorn holding a shield, the whole erection somewhat similar to the new cross lately erected in Edinburgh.

WALTER F. LYON.

ARCHITECTURAL EDUCATION.*

THE Conference of Architects which met in May last devoted a day to our subject, and we may draw from the resolutions which they adopted at the close of a most interesting meeting a hint for the division of a student's career into three stages:—first, the preliminary stage; secondly, the pupil stage; and, lastly, the advanced stage of studentship. It is possible also to borrow another good hint from the same source. The recommendations of the conference went no further than advising a series of examinations without suggesting a new system of instruction, and no new departure will be suggested in this paper. I firmly believe that a practical profession like ours can only be well learned by being admitted as a pupil to see and share the practice of it; and as my experience, both as a public teacher and as an examiner may add weight to an expression of opinion, I should like to state very emphatically that nothing which I have yet seen of the results of such teaching of architecture and building in colleges or art schools as at present exists seems to suggest that an architect can now be properly trained there; nor is there any likelihood of instruction in technical or other colleges, valuable though much of it is, soon if ever becoming an efficient substitute for the time-honoured plan of articled pupilage. What the future may have in store it is imprudent to attempt to forecast, but at present pupilage is the regular mode of admission, and it virtually rests with you, gentlemen, and with our colleagues who take pupils, to say *who* shall be the architects for the immediate future, and with what kind of equipment as architects they shall start their professional careers.

This brings us to the preliminary stage, or first division of our subject, and in approaching it let us ask ourselves who should be admitted to pupilage, and what previous education pupils should have received.

The architects who take pupils (for some prefer to protect themselves from such annoyance and trouble as even a good pupil occasions) are often called upon to exercise their discretion in deciding whether, so far as they are concerned, they ought or ought not to open the door of the profession to some youth whose friends wish to bring him up to architecture. The general rule should, in my judgment, be that the candidate who is accepted ought to start with the same advantages of position, education, and ability, and the same prospects of connexion as are expected of a candidate for any other liberal profession.

It is no good reason for a youth being an architect, and a very good reason for his *not* being so, that he is not thought clever enough for the law, or well enough off for medicine, or to have the requisite genius for painting or music. Success in architecture has required, and still more in the future will require personal ability, good sense, taste, energy, and perseverance in the individual himself, and implies that a young man's friends should be able to give him a thoroughly liberal education, and to afford a good and a sufficiently long and sufficiently complete professional training, including foreign travel; and that when he starts in practice he should, as far as his friends can foresee, have some useful connexions. There are quite enough young men who can unite all these conditions coming forward to recruit our profession, and I believe that it is every architect's duty, in fairness to the young men themselves, to see that such conditions are fulfilled to a reasonable extent before he consents to receive a pupil even on trial.

In speaking of the entrance to our profession it is right to refer to the men who from time to time force their way into it, as into others, by their ability, energy, and resolution, without being regularly articled.

I have known a learned judge who entered the legal profession as a lawyer's office boy without friends or means, and worked his way up to a distinguished position on the bench, and I have known of one or two cases of very successful architects of whom people used to say that they had risen from apprenticeship in one case to a mason, and in another to a plumber, and so on. But these are not the cases for which we have to make preparation, nor is it with the education of ordinary draughtsmen and assistants that we have to do to-night, but with that of architects,—with men for whom it will be a misfortune, a disappointment, and a failure in their scheme of life if instead of practising as principals they spend their days as assistants or clerks; and it seems to be only reasonable to allude to the previous education which is indispensable in ordinary cases to success in the attempt to arrive at this goal.

I have a special and personal inducement to dwell for a moment on this topic, speaking, as I do, in my native town and among my fellow-townsmen, by some at least of whom the names of those to whom I owe my own education must still be remembered with respect and regard. If I have met with any success in professional life, I consider that I owe it almost entirely to the excellent education which I had received before I ever thought of architecture as a profession at all. It is because my father and mother gave me every possible educational advantage within their reach, and not because of any exceptional opportunities in after life, that I have been able to make some little way in my profession, and of which I feel glad to be able here to make this acknowledgment. I feel also bound to draw the natural inference from it, and to urge strongly that the men who are to be the architects of the next generation must begin by being among the thoroughly well educated of this one.

A university degree of B.A. or B.Sc. is not indispensable, but is very desirable in most cases; and I am glad to think that graduates of the universities are becoming more common among the students of architecture than they were; but those certificates which mark a good, though a less exacting, standard of study, and which are attainable without going to college would, in many cases, indicate sufficient preparation. And if a young man has neither matriculated at London University nor passed the Oxford or the Cambridge Middle-Class Examination, or at the College of Preceptors, I suggest that, as matters now stand, and are likely to stand for the future, he ought only to be admitted as an architect's pupil after rather keen investigation into his exact educational status and his power of acquiring knowledge.

It may, in passing, be interesting to point out that the Institute at its last meeting, a week ago, agreed to a resolution for establishing an examination for bonâ-fide professional students, and the first stage of this, or the preliminary examination which is also intended to be established, will possibly hereafter furnish a good test of proper preparation for pupilage.

The standard of attainment marked by the magic letters, B.A., B.Sc., or the title "Asso-

* By Professor T. Roger Smith, being a paper read before the Sheffield Society of Architects on the 13th inst.

ciate of Arts," implies, of course, more knowledge, though not better training, than is absolutely requisite for an architect's ordinary work. But what is meant by a liberal education, if not that it goes beyond the exact limits of what is needed to supply the bare ordinary working needs of a man's calling? If we are to dole out just so much arithmetic as squaring dimensions requires, and no more; just so much science as enables one to understand why water circulates in a heating apparatus, and nothing beyond, we shall be giving what not only fails to be a liberal education, but what is not deserving the name of an education at all. For education is not simply the acquisition of a certain amount of attainment; in its true sense, it means enriching, strengthening and storing the means, stimulating and calling out the latent powers of the mind, and fitting the man to perform important work, and to discharge difficult duties.

There is one other, and a most important consideration, which must perhaps enter into our views as to preliminary education, and in particular cases modify them, and it is this. The special qualifications for an architect's work, and those which mainly distinguish him from other professional men, should be called out early; and we may even feel it right to be content with a lower standard of general attainment if the constructive and the artistic side of the young student's nature be unusually good, or have been to some extent developed.

Construction or handicraft of any sort used formerly never to be taught; but now in some schools there is a joiners' shop, or a turning lathe, or some such means of training; and any thing that seems to show a little skill with the hands, or a little power of contrivance, even if it be only such as is developed in the construction of a rabbit-hutch or a mouse-trap in play hours, is not without its value as an indication of aptitude.

Art is more seriously taught, or at least more generally attempted to be taught, than handicraft. Indeed, it is very rare that a youth is proposed as an architect's pupil who has not shown what is called "a decided taste for drawing." Generally speaking, drawing is not well learnt at schools, but there are exceptions, and very many schools of art furnish good instruction in at least some branches, and if by good fortune the "decided taste" has really been to some extent properly and usefully cultivated, the student starts with an undoubted advantage of a most valuable kind.

Cases, however, often arise when the preliminary education or the fine-art training are not fully up to the proper standard, and where yet there are reasons which make it right to let the aspirant or his friends decide in favour of architecture. In such cases, is it advisable to postpone articles, say for a year, and to arrange for the student's working at an art school and classes, and so making up his initial deficiency, or some of it. Or even if he must be articled, it will be wiser to let the first months of his time be spent in some such way rather than to begin his pupilage proper before he is fit to make good use of it. I may add that I have personally advised the parents of intending pupils to pursue one or other of these courses in more than one instance, and always with satisfactory results.

The second stage is that of the pupil. As a rule there is a month's trial, but it does not often reveal much to either party. The situation is new, so even a naturally indolent youth often works fairly well, and, on the other hand, an office in which there is really not much to learn presents enough novelties in the shape of ordinary office routine,—fresh companions and so on, to seem satisfactory enough to the beginner, and so his articles are duly signed and serious work begins.

I am, generally speaking, opposed to a term of three years as too short, just as the old seven years used to be too long. The opinion which I have formed is that four years is the most useful term. I seem to have noticed that my own pupils have appeared to make more progress in the fourth year than in any one of the other three; but in most cases after four years a young man will do better to change his office than to continue in the same groove longer. Between the circumstances of a pupil in a country office and one in a London office there must be usually some amount of difference, and in all probability the balance of advantage is in not a few cases in favour of the country. The division of labour which establishes itself wherever there is a great mass of work to be done by many workers is very apparent in London architectural practice. One builds churches and parsonages, another theatres, another offices, another houses in flats, and so on, and though this exclusiveness does not perhaps obtain in many cases to the permanent exclusion of other work, it must often occur that a pupil spending four years in an office sees absolutely nothing but the one sort of building, a run of which happens to have set in. We very few of us in London take out our own quantities, or measure our own extras and omissions. Many London architects do not write their own specifications or calculate their own iron girders, and almost the whole of our contracts are let to general contractors, who take the work of every trade, and undertake the whole for a lump sum.

Now, if I understand the conditions of practice in the country aright, the pupil is much more likely to see several different classes of building in hand at the same time. He may probably have a chance of learning something about quantities and of measuring up. He will have to encounter cases where separate contracts are made with separate tradesmen, and thus his chances of seeing varied practice seem to be better than the chances of a pupil in London.

There are, moreover, fewer distractions. Quite apart from the endless round of amusements, a young man in London has very many more chances of being induced to fritter away his time by attending to too many things at once. To succeed in any profession,—certainly in ours,—a student ought practically to give the whole of his time and attention to it for some years, and I think he is more likely to do that if, to a certain extent, he is shut up to his work by the circumstances under which he pursues it, at any rate during the earlier years of his career. Another matter, also, though of minor importance, has a very real influence on London life. I allude to the enormous and difficult distances, which mean a serious loss of time and no small amount of fatigue, both of which tell heavily against the use of privileges that London affords. Thus the Architectural Museum is a mile from the Architectural Association rooms. They are both about three miles from the South Kensington Museum. That museum is nearly four miles from the British Museum or University College; and the unrivalled collection of architectural casts at the Crystal Palace is six or seven miles from any of them. These are all in London in a certain sense, but you can easily understand that wear and tear and delay are occasioned by going from one to the other, if a student attempts to make a practice of doing so.

It would be well at the outset of his career as an architect's pupil to put seriously before each student the programme of the compulsory examination for Associates of the Institute, that his attention may be drawn early to those subjects with which during the next six or seven years more or less he should strive to make himself familiar. It is true that, as a good deal of elementary work has to be got through in his early years, this programme need not be pressed upon him, yet he cannot well have it too early brought under his notice. When the new examination is established the programme of that will naturally be the one to bring forward at this stage.

From the first and during the whole of his time a pupil and his principal should neither of them forget that he has come in order to learn. The office cannot, of course, be turned into an academy, but that is not necessary. If the principal will make it his practice to look into what the pupil is doing, ascertain how far he understands it, and give him a few words of explanation from time to time, that practice will go a long way towards educating him. Such explanations often sink deep into the memory.

It is also desirable to put a pupil on varied work and on work that is a little difficult for him.

Of course, in organising the work of a large staff part of the skill of a successful manager consists in putting into each man's hands that work for which he is most fitted and keeping him at it. A somewhat opposite course is due to the pupil, and the inconvenience, loss of time, and trouble occasioned thereby are part of the consideration for the premium he has to pay, while the result will, as a rule, be that a pupil so treated will make manifest progress.

A certain amount of work that is direct study should be provided for every pupil. There is, fortunately, a time-honoured tradition that every pupil should draw out the Orders with some degree of precision. I hope that tradition is not quite dead, for it is an excellent practice, and if in the offices where Gothic work only is done the Orders are regarded as inadmissible, I hope that some tolerably severe study of well-marked architectural features takes its place.

Another most useful practice is taking a pupil about, allowing him opportunities of visiting the works in hand is usual and necessary; but perhaps we do not always remember how much he can learn from being allowed to accompany the principal occasionally in an inspection of buildings in progress, or when a survey has to be made; or, best of all, on a sketching expedition. He sees how architecture is practised, and how it is studied, and, as example is better than precept, he learns in a much better way than if he is simply told what to do, or left to find out.

It seems to be of very great importance early to direct attention to buildings rather than drawings as objects with which an architect has to deal. Our cumbrous system of building by contract has obliged us to erect our works on paper with such a degree of completeness before a turf is turned on the site, that we all of us run a great risk of mistaking draughtsmanship for architecture, and if architects fall into the snare much more are pupils liable so to do.

Perhaps the best remedy is contact with works in progress and with ancient buildings. I have already spoken about taking or sending the pupil to see works in progress. There is a great deal to be done, especially in such a situation as Sheffield, by introducing him to the study of ancient buildings.

The principal may occasionally be able to renew his student-habits for a day or two to the great advantage both of himself and his pupil, but much of this advantage must necessarily be secured by the student alone, or with fellow-students. Now that the bicycle and tricycle have reduced the cost of travelling, the riches of the Yorkshire abbeys and of the churches of Lincolnshire and of the domestic work in Derbyshire are within easier reach than ever before, and no finer examples of our art exist in this, or I think I might without error say, in any country. Encourage your pupils to visit them and to bring away such drawings as they are able, and be sure that every week, nay, every single day, spent in such study will bear fruit.

Perhaps I cannot do better than introduce here an extract from the syllabus of the Science and Art Department on Architecture, issued in 1887, and bearing on this very point:—

"The knowledge obtained by reading, or even thoroughly studying, text-books, whether in a class or in private, will, however, be comparatively superficial and valueless, unless it is combined with careful measurements and drawings of existing examples. The best mode in which an architectural work can first be studied, and the only mode in which it can be satisfactorily and completely investigated is by drawing it to scale."

"Having found a feature in a building, or an entire building, which is pointed out or recommends itself as fit for the purpose, the student, in the earlier stages of his course, should proceed to measure it, and make such drawings of it as would be required, were it destroyed, to guide the workmen in the reconstruction of it; that is to say, he should take a plan or plans, an elevation or elevations, and a section of it. He should carefully take the profiles of all the mouldings, full size, with the aid of a lead tape; and he should draw as characteristically as he can all the carving. As far as possible this work should be done to scale on the spot, and where that seems impracticable, the sketches should be made to scale so far as the main lines go, and careful and complete measurements should ba taken and marked on the sketches for working out at home. . . . . A single entrance door, a porch, or a traceried window, or even a buttress, drawn out carefully in this way, will be found to furnish more precise ideas of the architecture than many pages of print and woodcuts; and a few studies of this sort will ground the student in the elements of what he desires to learn. Later on sketches in perspective may be made, and will prove valuable; but perspective drawings are subject to the great disadvantage that they only record the effect to the spectator of what has been built, and give comparatively little information as to the method by which that effect has been obtained. Indeed, in some points (such as, *e.g.*, the proportion of openings seen sideways), even the best perspective drawings are almost always misleading, and on others (as, for example, the profiles of

mouldings), they rarely give any information whatever.

Next to actual examples, the best objects for study with the pencil are casts. These usually are confined to comparatively small portions of work, but in other respects they are admirably adapted to the purposes of the student; and carving, enrichments, and mouldings can often be better studied from casts than from the originals, owing to its being easy to put them exactly in the positions where they can be most easily seen, and best drawn and measured.

There are few parts of England where some good examples of English architecture are not within reach. Where there really is nothing of the sort available of study, it may be possible to find a piece of modern work of which the detail is correct.

The practice of drawing from memory is strongly recommended. Whatever work is done in this and other similar examinations must be done entirely from memory, and the faculty of working in this way will not be acquired without exercise; but care should be taken to check very carefully the work so done against correct originals afterwards so as to prevent mistakes being fixed on the mind."

The advice of the principal as to how best to make use of his evenings and other leisure, time will be often of use to a pupil. He will probably be anxious to keep up or improve himself in some of his school studies, and some time may be usefully given to this sort of work, especially in perfecting himself in French, German, or Italian if he has made any progress in either, or even to learning one of those languages if he has unfortunately acquired neither. In most cases there is so much room for improvement in drawing that it is always safe to recommend the study of the figure (not of geometrical drawing) or of ornament at a school of art, and then there are books. The best elementary books are invaluable friends, and if a student is introduced to them by degrees, not too many at a time, he will probably make good use of them.

Among the small text-books on construction which are most to be recommended, I should place Dobson's "Art of Building," Anderson's "Strength of Materials," and Tarn's "Roofs and Science of Building," to be followed by Tredgold's "Carpentry," and either Rivington's "Notes on Construction" or Colonel Seddon's more compact book on the same subject. It is not so easy, perhaps, to name useful cheap text-books on architecture as an art, owing to the need of good illustrations, but a great deal is to be got from Bury's "Styles," Leeds's "Orders," and Parker's or Bloxham's "Manuals of Gothic Architecture." I am responsible with Mr. Poynter in one case, and Mr. Slater in the other, for two small volumes on architecture, which may serve as an introduction to such historical works as those of Fergusson and Rickman, and that admirable work, of especial interest in Yorkshire, Sharpe's "Parallels."

The third stage reaches from the conclusion of a pupil's articles to his passing the Institute Examination, and should be regulated more directly by that Examination; that is to say, the studies and occupations should be such as would form a preparation for it. That this can be done in many cases by students in the provinces without the necessity of moving to London has been abundantly proved by the large number of provincial students who have passed the Examination, and who have won Institute prizes.

There is an excellent account of the Examination in the paper read (on Nov. 29, 1887) at Manchester by Mr. Slater, the President of the Architectural Association, and himself an examiner; and the able and indefatigable chairman of the Board, Mr. Cates, has exerted himself with so much clearness and precision to make its scope and nature known that I cannot refer you to anything better than his address as chairman of the Conference of Architects on education in May last, and the introduction to the official syllabus of the Examination. Mention of Mr. Cates's name ought not to be made in connexion with this subject without some recognition of the immense debt of gratitude which the members of our profession owe him for his unwearied devotion to the establishment and organisation of this Examination, and for the energy, learning, and, above all, the persevering personal attention which he has brought to bear upon the conduct of it. It may, I think, be said with perfect truth that there is nothing required of a candidate in this Examination of which it is safe for an architect to be ignorant when he enters responsible practice; and that there is nothing which a student who has served his articles and is engaged as an assistant in such a town as this may not perfectly well master if he makes good use of his leisure and his opportunities.

In considering this, the third stage of the student's career, I ask you to look in a comprehensive way with me into the official programme which he ought now to regard as his chart, or his handbook, and to examine the scope of the Examination itself a little attentively by its light and with the help of the Examination questions published year by year in the Calendar. Three days and a half are devoted to the written and graphic examination, and 700 marks are unequally divided among seven subjects. Before, however, being admitted the candidate, unless he be an architect ten years in practice, must have done satisfactorily a not very exacting amount of probationary work, fortified by optional work calculated to show that he has studied architecture.

If the probationary work has been approved, and the candidate admitted, his first half-day's work is devoted to the history of architecture,—some questions being general, but others being set upon the architecture of a definite period selected by himself. History, it may be noted here, has a rather wider scope than we often give to the word, for in the Examination papers we find questions on the characteristics of styles or those of individual buildings, and on similar topics. Within his selected period the candidate is clearly expected to prepare himself carefully and somewhat minutely. Such a question, for example, as "sketch the difference between the vaulting ribs of the period selected by you and those of the period immediately preceding it," cannot be described as in any way unfair, but it is searching, and it means that the candidate is expected to have a thorough knowledge of what he professes to have specially studied. Careful use of books and study of buildings, with, if it be accessible, the advantage of a course of lectures on the history of architecture, are all needed as preparation for this day's work.

The following morning is spent on mouldings, features, and ornaments; in other words, on enabling the candidate to show that some of the material out of which an architectural design is made is stored in his memory, and can be reproduced with fair accuracy when wanted. The questions, as will be seen, range over Greek, Roman, Renaissance, and Gothic architecture, and while "the candidate will be expected to show a thorough acquaintance (graphic and historical) with the style and period selected by him"; he will be required to show a good general knowledge. Practice in drawing features, especially from the round, and above all considerable previous practice in drawing them from memory, and a cultivated keenness of observation will be needed to enable a candidate to do justice to this paper.

The afternoon of the second day is given up to three practical subjects,—sanitary science, strength of materials, and shoring. About half the questions of the paper now before me are directed to drainage, water supply, and connected subjects, and are most of them such as cannot easily be answered out of books and without some practical familiarity with the subject. Then follow simple questions as to the strength of iron and timber beams requiring only a moderate familiarity with the formulæ and methods of calculation now made use of. There can be little doubt that this section of the Examination is at present very moderate in its demands, and, no doubt, will be made more searching as years go on. The paper closes with some questions on shoring and underpinning easy enough to those who have seen a little such practice, and, probably, perplexing to most others.

The third day (second entire day) is devoted, morning and afternoon, to sketching a design for a building; and as four eighth-scale drawings are required, and, in addition, any details there may be time for, six and a half hours will be fully occupied unless the candidate be naturally quick or specially trained. Of course, office-work and any sketches of design which may have been made as exercises, and still better, any designs that have been made for prizes offered by one of the journals or by any society, have all their share in fitting the learner for this,—perhaps the most important and most arduous part of his examination. It must not be forgotten that the ability to originate the plan, section, and elevation of a building intended for some purpose is, more than any other thing, an architect's special equipment for practice. He may make shift without some other qualifications; but if he cannot make a plan when it is wanted, and fit it with an elevation and a section, or, in other words, design the exterior and the interior of the building he has planned, there is small hope for him. The difficulty, of course, is to do this under pressure and within a definite time, and it is very desirable for candidates to practise for some time beforehand on subjects set by one another or by their principals, or in designing classes or sketching clubs.

The final day of the Examination is divided between three subjects, all practical ones. In the morning materials and construction are taken up.

The paper on materials ought not to present much difficulty to a student who has had fair opportunities as a pupil and has used good handbooks and fairly mastered them. That on construction, which was set in 86-7, appears, I must admit, to bristle with difficulties; or, if that is too severe a description, it at any rate would require much more than an ordinary acquaintance with building and construction to enable a candidate to answer a fair proportion of these questions creditably. In the afternoon, part of the time is devoted to writing two trades of a specification for the building designed on the previous day, and to describing how to make an approximate estimate of the same; and the other half is given to professional practice, a subject in treating which the examiners have passed beyond the limitation in the printed programme and taken up a few simple points in the general and usual procedure of architectural practice.

Perhaps the most formidable though by no means really the most arduous part of the whole Examination remains to be faced, namely the Oral Examination. Each candidate is seen separately, and, of course, is liable to feel extremely nervous at the prospect of such an interview. He may, however, if he be really fit to pass, take courage from the recollection that the subjects of the questions will be subjects he has prepared himself in, and that the wish of the examiners is to be fair, not to perplex or overreach him, and that it will be a disappointment to them if they cannot pass him. The examiner's object is to ascertain fairly if he be fit to pass, and not to put obstacles in his way.

This, of course, must be accepted as an outsider's hasty glimpse at the Examination (for as a Professor I am, fortunately for me, deemed ineligible to act as an examiner). If you want to see a fuller and better account of it as it appears to an examiner himself I must refer you to Mr. Slater's capital paper at Manchester already cited, where, at considerable length and with much ease he sets forth the subjects of examination and the general scope as well as the details of the whole.

As a part of the machinery of education, I wish to direct attention to that series of premiums, scholarships, medals, and exhibitions which are at once a stimulus and an aid to the student, and of which the number has been wonderfully multiplied during a quarter of a century. They are now so numerous, and include so many valuable prizes adapted to such various portions of an architectural student's curriculum, that they form a really important feature in the educational system of our profession. The value of such prizes lies, not only in their forming an incentive to work and a reward for good work, and a valuable pecuniary aid in pursuing further studies, but also in their offering a very definite, tangible, and not unreachable object, towards the attainment of which a student may direct his efforts during the leisure of one season or one year. Many people who are embarrassed by a large curriculum, and unable easily to map out a course for themselves, will readily concentrate their work on one object. I can fancy a student saying "I cannot yet undertake the formidable task of preparing for the Examination, but I will try for the Grissell Medal," and when his drawings for that medal are complete, whatever be his success, he will find that, perhaps unconsciously, he has travelled over a good section of the ground which he ought to cover in his preparation for the Examination.

The aggregate money value of the prizes annually offered by the Institute for competition is over 250*l*. If to this sum be added occasional scholarships or prizes offered in the session just closed, the total is raised to a much higher sum, and though some of this was

exceptional, there will probably be such competitions in other years. These prizes, with certain limitations as to age, &c., are open to general competition. To Members of the Architectural Association a different series of prizes is open. Students of the Royal Academy, again, can compete for others, including what may well be called the blue ribbon of our profession,—the Gold Medal and travelling studentship,—and from time to time the professional papers, or some of them, offer premiums for designs which sometimes provoke a most encouraging response.

The Institute prizes include the Essay prize for an illustrated essay on a subject selected by the Council. This prize is calculated to show general cultivation, and to call out the power of investigating and clearly setting forth some architectural question. The Measured Drawings prize is a prize intended to stimulate careful and accurate study of ancient work,—a study which lies at the foundation of all success in architecture. The Soane Medallion, till lately, and perhaps still, the most considerable prize annually offered, is accompanied by a small travelling studentship, and is given for a design for a building, and is intended to test the student's power as a draughtsman, his knowledge as a student, and also his originality as a designer. The Pugin Studentship for the study of Mediæval architecture is granted on an examination of drawings and sketches submitted in competition. The valuable Owen Jones Studentship for the study of colour is awarded on a similar basis to the Pugin. The Godwin Bursary, for the study of modern architecture abroad, is granted on an examination of working drawings, &c. The Tite Prize is given for a design in Italian Renaissance. The Grissell Gold Medal is given for a design intended to solve a structural, and usually a difficult, problem. The Ashpitel Prize is given for marked success in the Examination, and last, but by no means least, Colonel Edis's Prize is offered for the best set of sketches made during a holiday tour. Each of them is, in its way, a valuable auxiliary to education, and no better advice can be given to an advanced student than to select one competition,—the one which he is best fitted to excel in, and to try and obtain one of these prizes.

If I may venture to suggest, I think the funds of a society like this could not be more usefully spent, if you have any surplus beyond what the actual expenses absorb, than in establishing a prize or prizes for students of Sheffield and the neighbourhood. If there were only one, surely sketching or measured drawings, perhaps similar to Colonel Edis's prize in its regulations, should have the first claim. If more than one, some constructional subject should not be forgotten; and, in any case, I think the subjects should either be subjects in the Examination programme, or should be subjects or studies directly useful to students preparing for the Examination.

About half the prizes I have named are given in connexion with travel in this or in foreign countries, the Soane, Godwin, Owen Jones, and Pugin prizes being all travelling studentships, and the Edis connected with travel. I hope this fact, and the inference to be drawn from it will not be lost on the students and others who want to get suggestions for self-culture. It is not by accident that the names of the distinguished men named above have become connected with travelling studentships. The architect must be something of a citizen of the world, and though Sheffield, just as well as any other active busy place, will be a good school for all the elements of architectural practice, and for much that is not elementary, there is a certain wideness of knowledge requisite which can only be gathered in by going far afield and seeing the best architecture of many cities, English and foreign.

The value of the study on the spot of existing buildings is the greater, because some such work will be found almost as indispensable to the student preparing to pass the Examination as to him in his preparation for practice. Familiarity with some few definite buildings, not the published plans and elevations of them, but the buildings themselves, must be at the bottom of any power of satisfactorily answering questions such as the Examiners have put in previous years, and will put in the future; and familiarity with buildings and making sketches and drawings of them will best store the memory, train the hand, and cultivate the eye and the taste, and so supply the material out of which the future architect is to make his designs.

In concluding these remarks I should like to draw the attention of students and of those who direct their studies to three aspects of architectual education, which, perhaps, one may best describe as the intellectual, the graphic, and the personal methods in the study of architecture.

What I mean by the intellectual method of study if put into plainer English is a man's giving his mind and his whole mind to his professional studies. There are many nice well-conducted but listless indifferent fellows who remain through office hours at the office and do what work is given them to do with a temper of mind which, perhaps, I may best call resignation, and when the hour for closing arrives suddenly grow brisk and animated, leave with a more cheerful air and a quicker step than they have exhibited through the day, and betake themselves to the occupations, the studies, or the amusements in which they take a real interest, and to which they really give their minds. These may be very estimable young fellows, but the successful architects of the coming generation will not be found among them. Sufficient recreation is indispensable, and out of door pursuits are of the greatest service, but the men who will succeed are those to whom the day in the office is not irksome, and who take a genuine interest in what they have to do there, men whose leisure is given more to study than to recreation, and whose minds are busy about their profession alike in the hours of work and hours of private study. In the University College lecture already alluded to you will find some remarks upon the great value of reading, of writing, and of conference. Bacon's method of study. Now all these three are methods of exercising and informing the intellect. The man who acquires a knowledge of books, the man who can write a good account of some architectural matter, or, to come to practical points, can write a good business letter, the man who has something to say about architecture when it is talked about, is he whose mind is full of it, and whose thoughts are constantly working on the subject; and he it is who is likely to master the difficulties, serious though they be, which beset the early stages of every professional man's career in practice, difficulties from which the architect is by no means exempt.

It is not possible for us to *make* our pupils think about their work, or throw their whole mind into it against their will, but we can without doubt do a great deal to foster an intellectual interest in that work, or to damp it. We can hardly fail to see that this is a matter which those who have the responsibility of pupils should never forget, and to which they should direct their pupils' attention earnestly and candidly. And it is a matter of the very first importance for students themselves. They should not neglect any means for keeping up their own interest in their work, and should make it a rule to think over everything that presents itself to their notice. A man has very great power over his own habit of thought, and he who will systematically apply his mind to his profession will reap his reward.

If the intellectual method of study be of great importance, what I have called the graphic method is not less so: in fact, is much more obviously essential; yet many a man is more or less aware that he has got to learn how to make drawings, who is only very dimly conscious that he also has to think about them, and, in fact, to think by means of drawings. In the present day, skilled draughtsmanship is absolutely indispensable. Possibly too much attention is being paid to it, but as long as it is receiving such attention, he who would not be left behind in the race must attend to it also. It is very desirable for every architect to be able to draw the figure fairly well from the antique, and it is essential to become so at home in the use of his instruments as to be perfectly at ease in using them; in short, to be able to think through a pair of dividers or a bow pencil as a writer thinks through his pen, or a sculptor through his modelling tool. It is equally necessary, and in time becomes equally interesting, to master the art of showing construction perfectly,—to make working drawings which instead of evading difficulties run to meet them and demonstrate how they are to be solved,—drawings which give as much information as possible to the workman, and which leave nothing to the chance of how he may think it best to work.

Every architect should also master perspective, and if, in addition, he can gain some familiarity with landscape, and with the manipulation of water-colours, it will be of great advantage to him.

I need say little if anything here about how drawing is to be taught and learnt, but I should like to urge the necessity of its being good,—very good; thoroughly artistic; also thoroughly practical; and to be allowed to repeat what I have more than once before said in public, that it is with the pencil that we study, and so gather the materials of our work. It is pencil in hand that we design our buildings, and through the point of the pencil that an architect's thoughts flow. It is by the pencil that we make clear to our clients what we propose to do for them. It is through the pencil that we convey our instructions to the army of workmen of all trades and from all quarters who erect the building, and it is with the pencil that a permanent record of all about the building which has to be recorded is kept, or that a view of it, as it appears, is communicated to the public, who cannot go and see it. Need one add more to show that he who would be master of an architect's work must attain a mastery of this little implement?

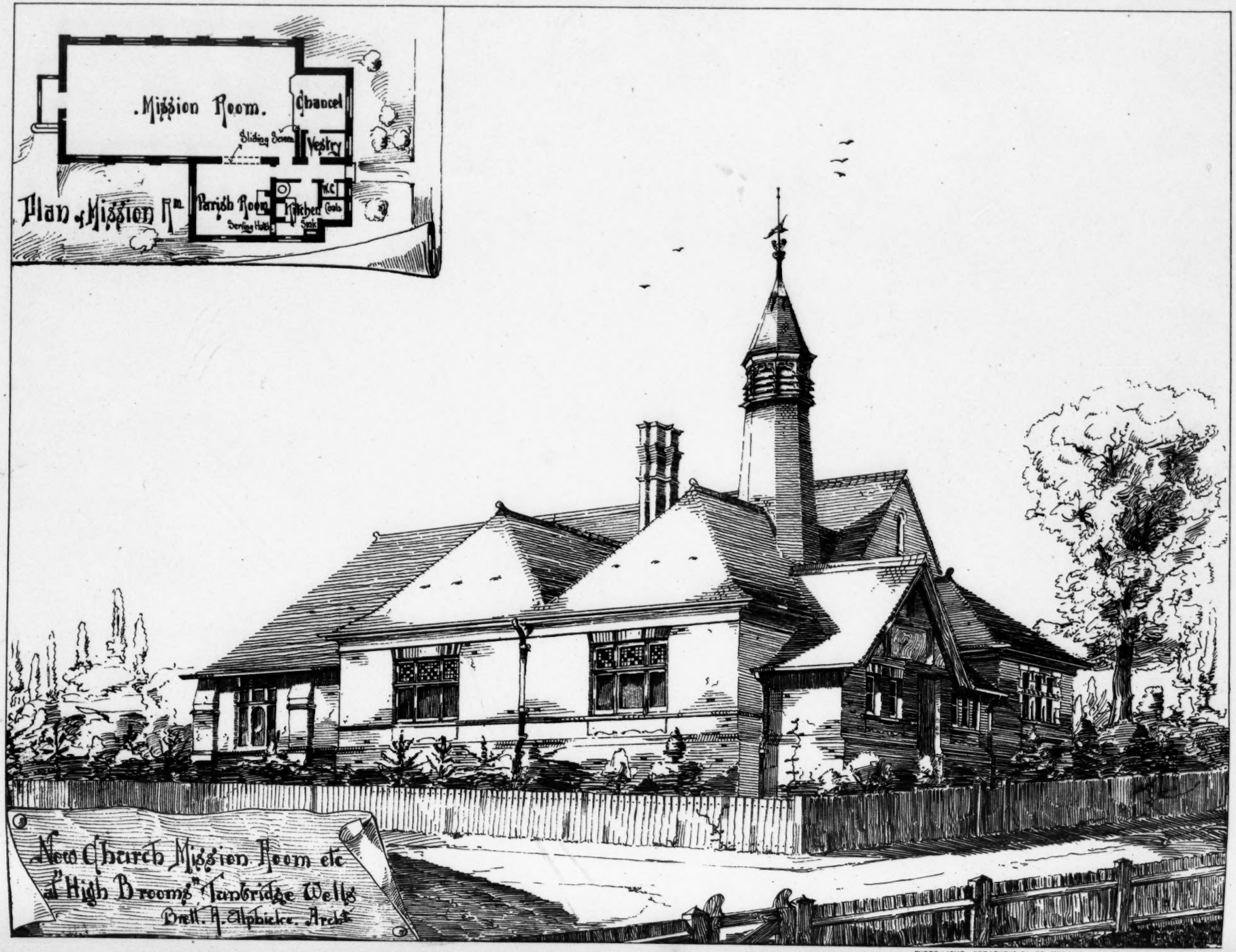
Thirdly, there is the method to which, for want of a better, the title of the personal method of the study of architecture was given. By this is meant the study, by each student for himself, of actual buildings. This, indeed, is left to be the last topic of my lecture, or rather is come back to, for it was touched upon earlier, because it is probably the most important; and if you go away with the impression that the lecturer strongly advocated the personal study of actual work and actual buildings, the impression which, of all others, I should best like to make upon this audience will have been produced.

First as to construction. It is possible to learn a good deal about it from books and from the work of an office, and yet to be completely at sea when one is brought face to face with actual building for the first time. Construction,—not referring to the scientific but to the practical side,—is best learnt, and only well learnt, on the scaffold, in the builder's yard, the quarry, and the brickfield, or at the bench or the banker. Nothing is more useful than for a youth to spend some time in the joiner's shop or at the carpenters' bench, or with the masons, trying his hand at using tools and at setting out work. Probably the joiners' bench is the best school, because there so much is done in the way of full-sized drawing, as well as of work that the learner soon gets a grasp of the use of geometrical drawing in its relation to actual work, and this, perhaps, with less difficulty than in the case of masonry.

The opportunity of watching one building from the start to the finish is, when it can be had, of the very greatest value to a student, and he should be advised, and, indeed, expected to keep a full record of every step of every sort, and to make sketches of every piece of construction from beginning to end. What has been said of construction also applies to materials, and while no information with respect to them comes amiss, it is the actual seeing and handling and working on them that makes their nature known.

It is, however, more necessary at the present day when, as was just now said, draughtsmanship is receiving almost too exclusive attention to point out once more that architecture is building, and does not consist in plans and elevations, and that the real study of architecture is the study of buildings.

The information contained in books, or gained at lectures, or in conversation, is but second-hand knowledge. Photographs are but transcripts, and buying a photograph gives no more knowledge of architecture than reading a bill of fare will stay a hungry stomach. The really important solid basis on which a successful architect can build is his personal familiarity, not only with office work, materials, and construction, but with existing buildings. He should see and examine many of the best works of the best periods abroad, as well as at home, and the best of those he should not only examine but thoroughly study, draw, measure, and master. This study will be equally valuable as a stimulus to invention; as cultivating the critical and artistic faculties, as enriching the memory, and as in the best and truest sense an



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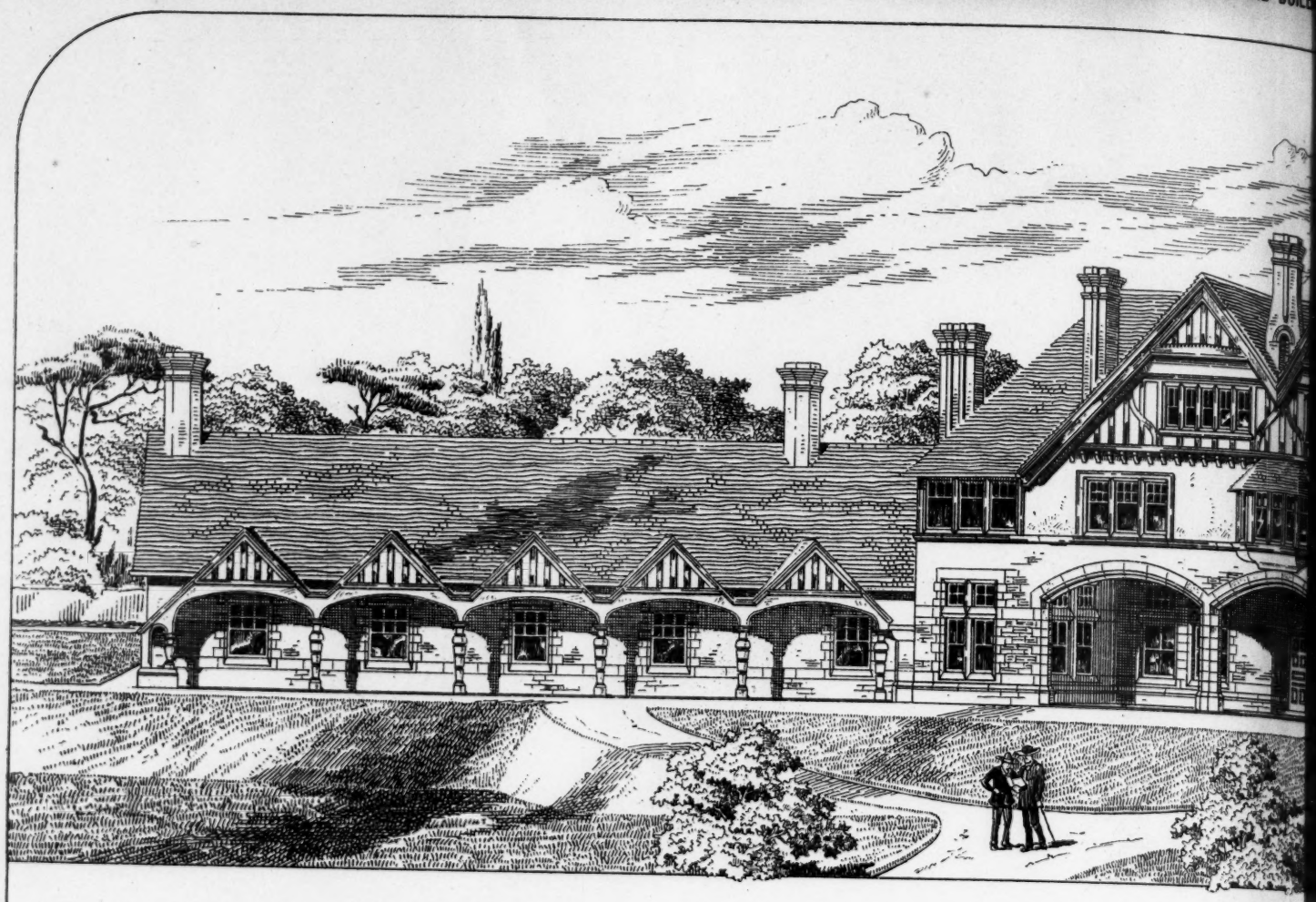

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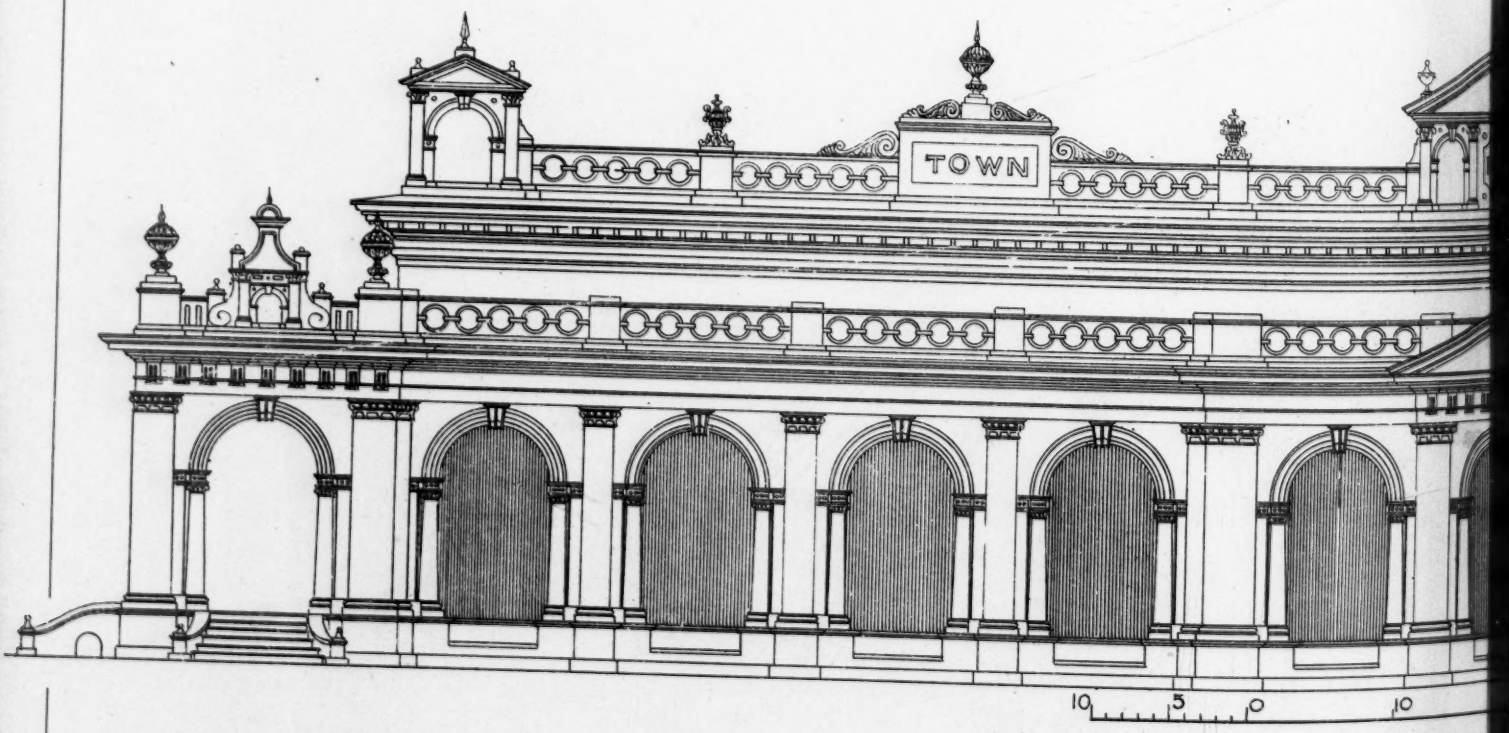

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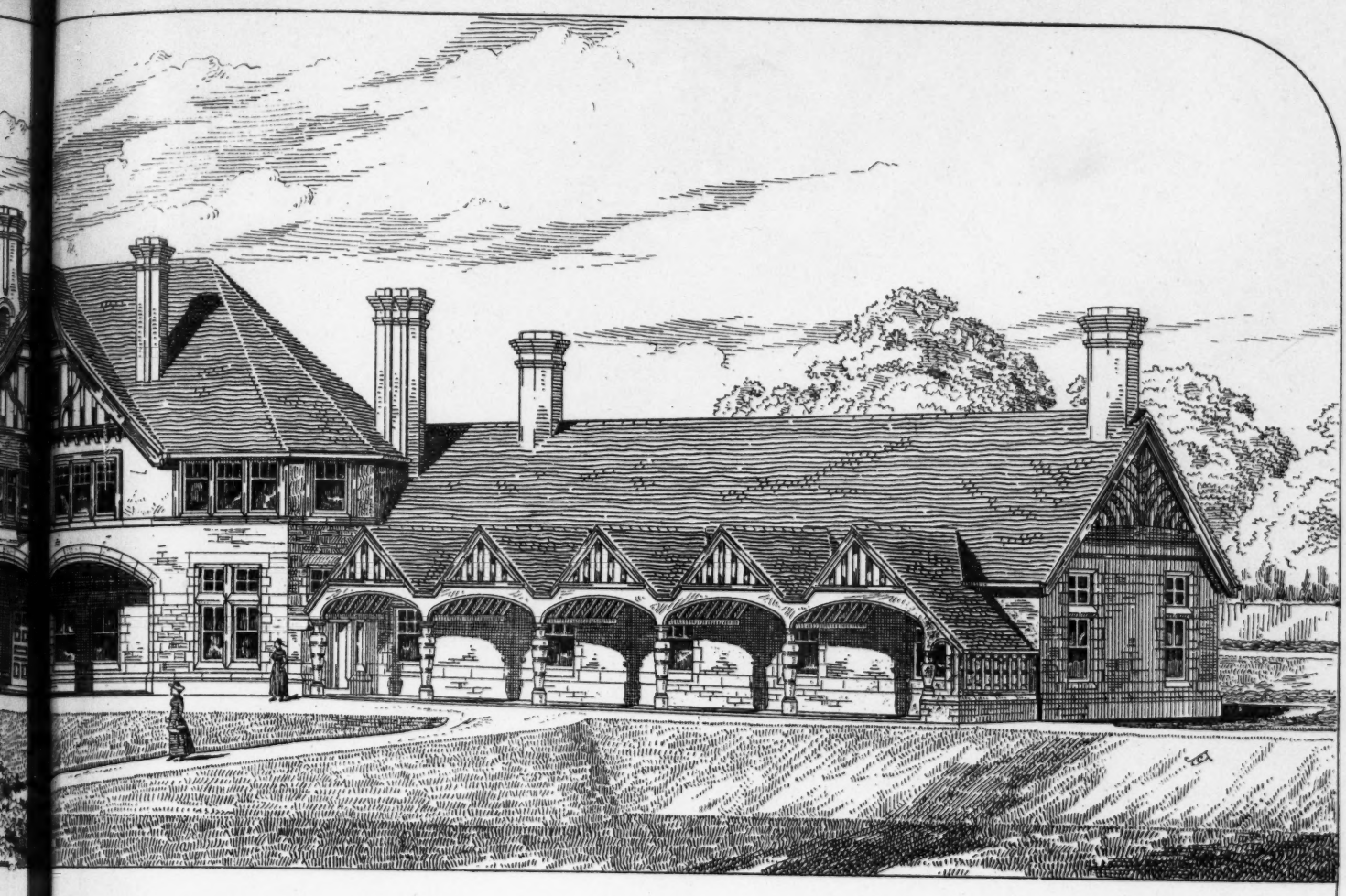

ESSRS. CHORLEY & CONNON, ARCHITECTS.

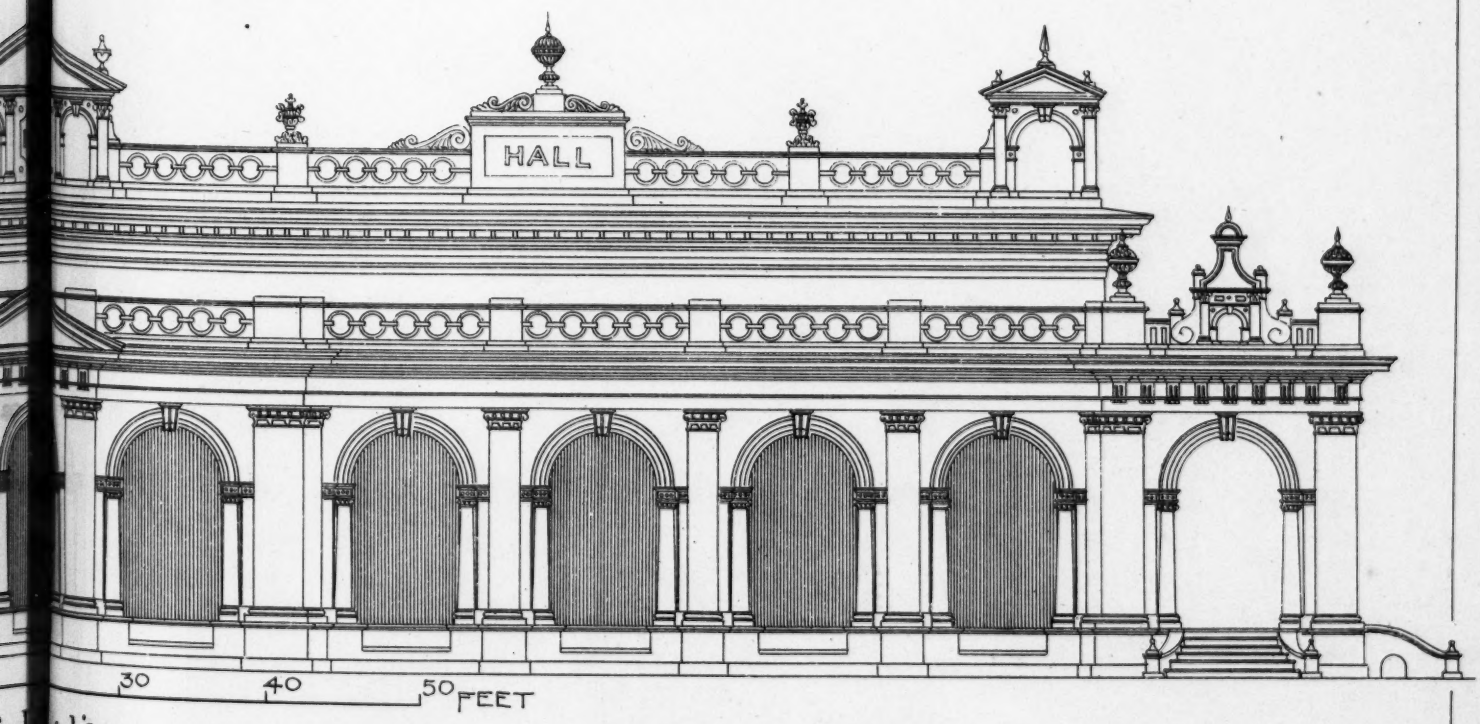

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PHOTO-LITHO. SPRAGUE & Co. 22. MARTINS LANE, CANNON ST. LONDON, E.C.

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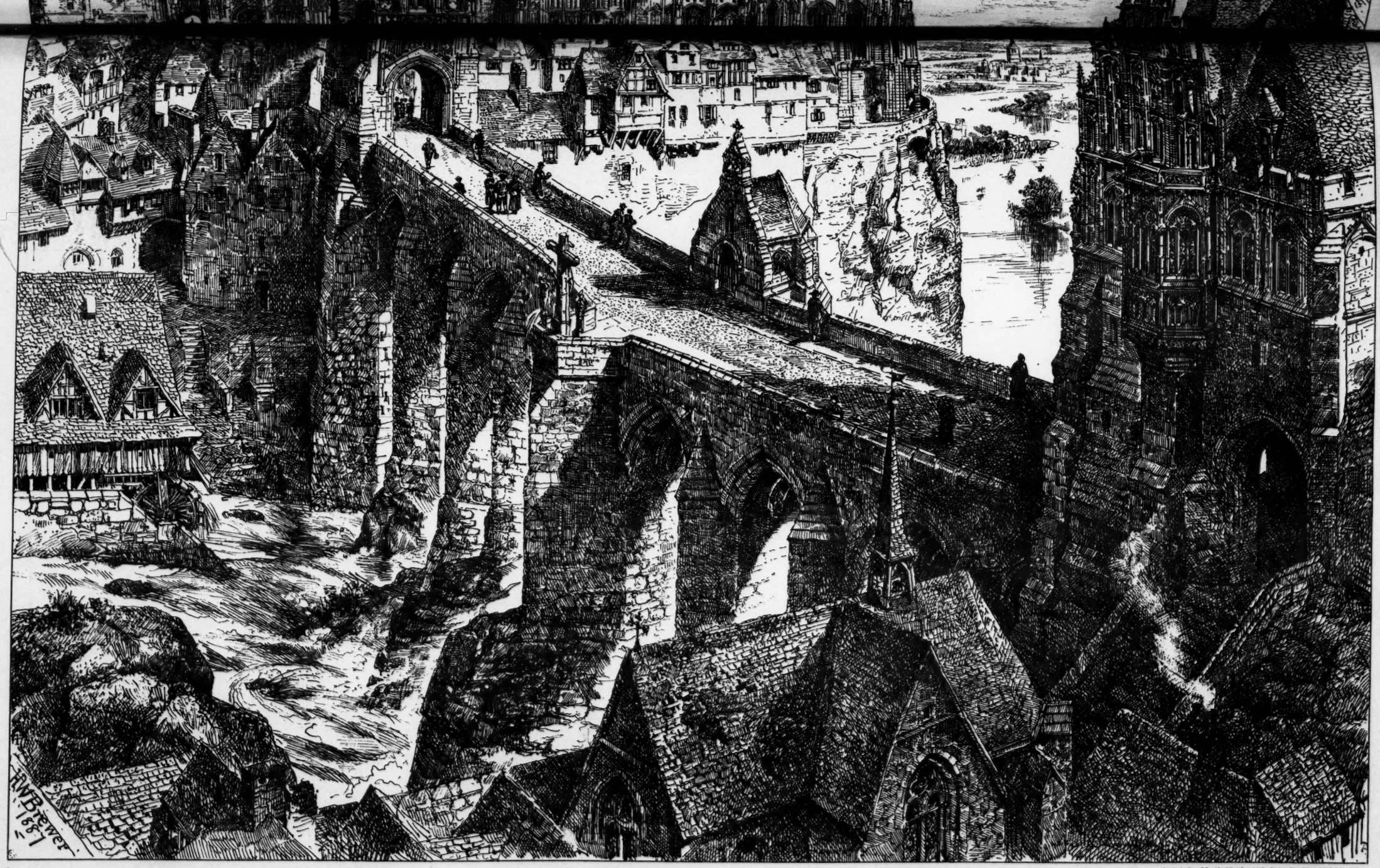
DR. BARNARDO'S NEW HOME, STEPNEY CAUSEWAY.—Mr. R. H. Hill, Architect.

PHOTO-LITHO., SPRAGUE & Co 82, MARTINS LANE, CANNON ST, LONDON, E.C.

DR. BARNARDO'S NEW HOME, STEPNEY CAUSEWAY.—Mr. R. H. Hull, Architect.



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THE TWO BRIDGES.

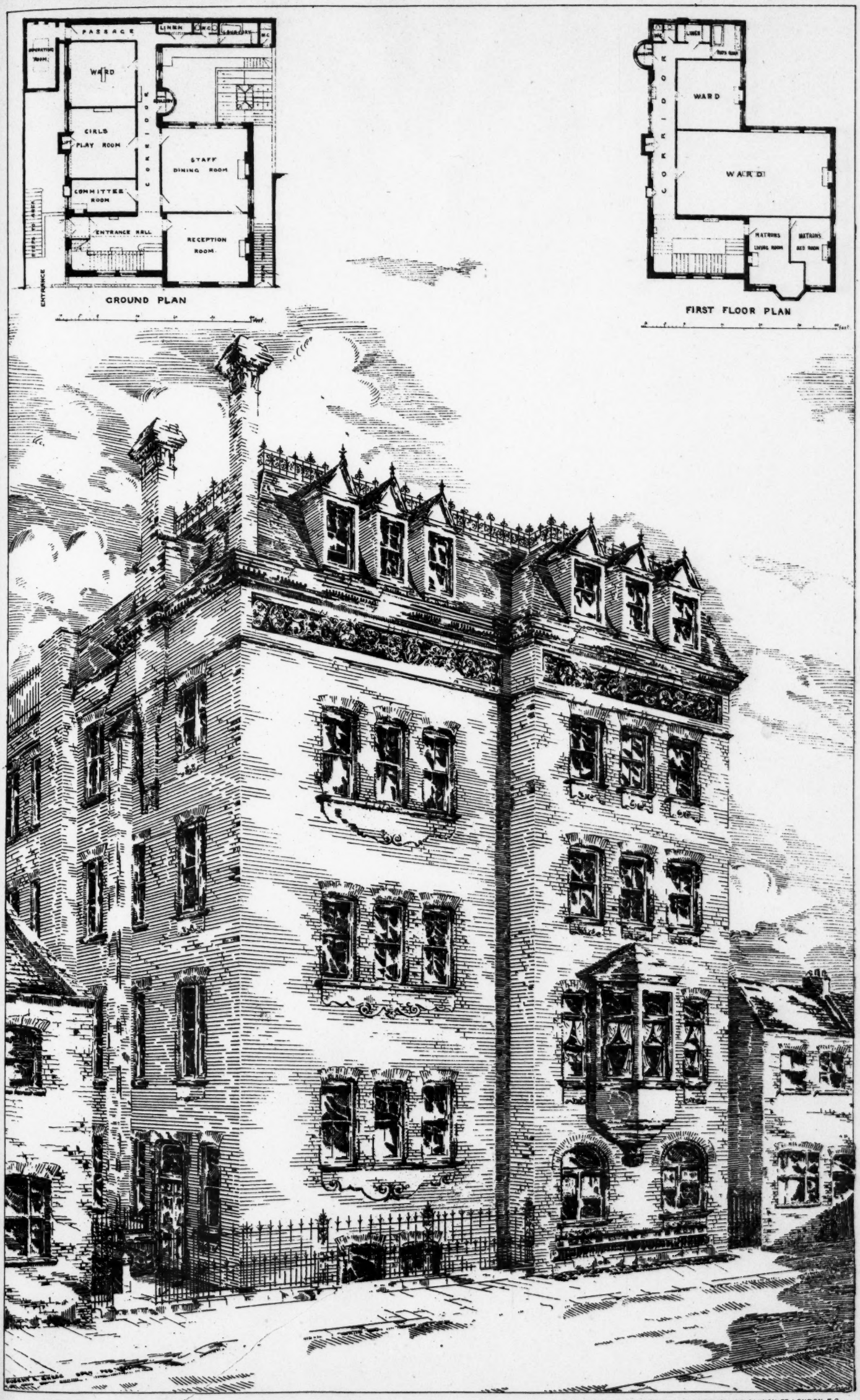
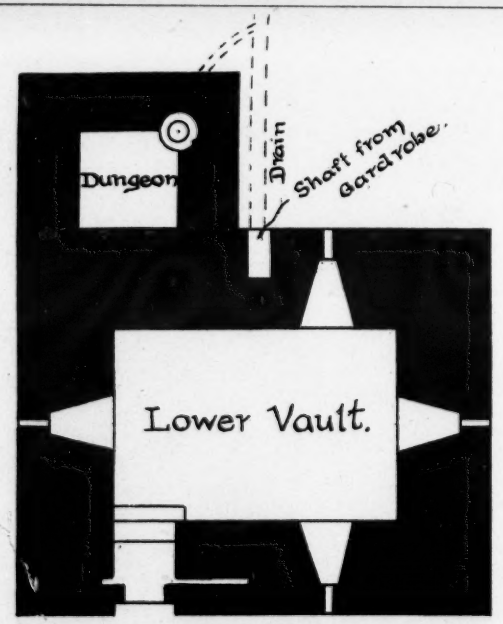


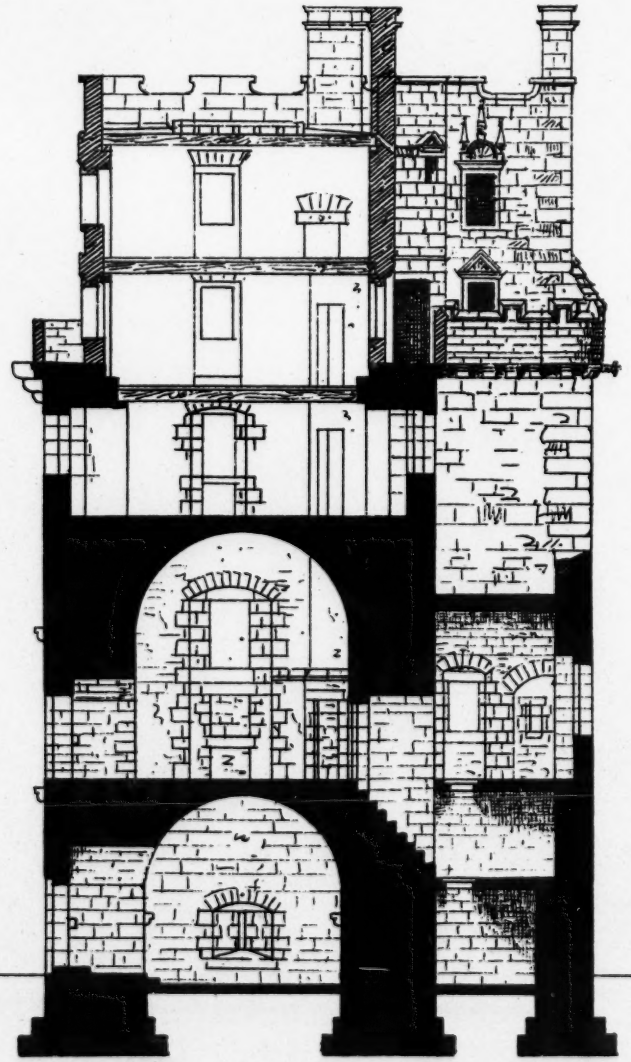
PHOTO-LITHO, SPRAGUE & Co 22, MARTINS LANE, CANNON ST, LONDON, E.C.

DR. BARNARDO'S INFIRMARY, STEPNEY.—Mr. Ebenezer Gregg, F.R.I.B.A., Architect

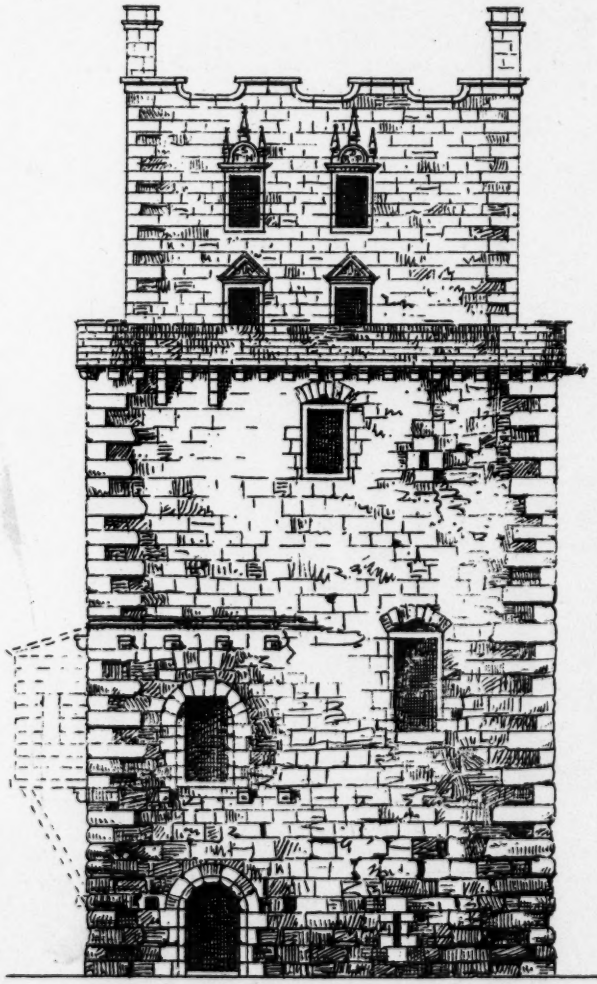


Ground Floor.

First Floor.



Section.

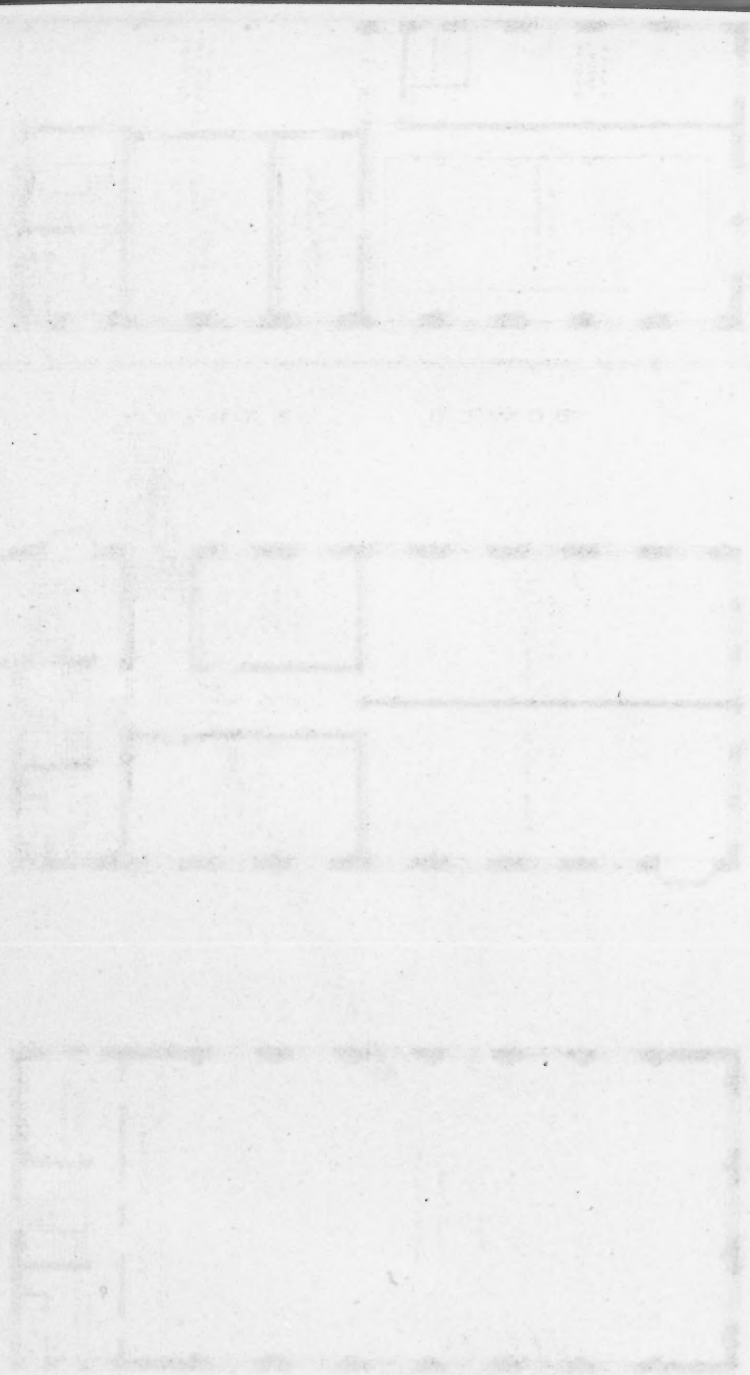


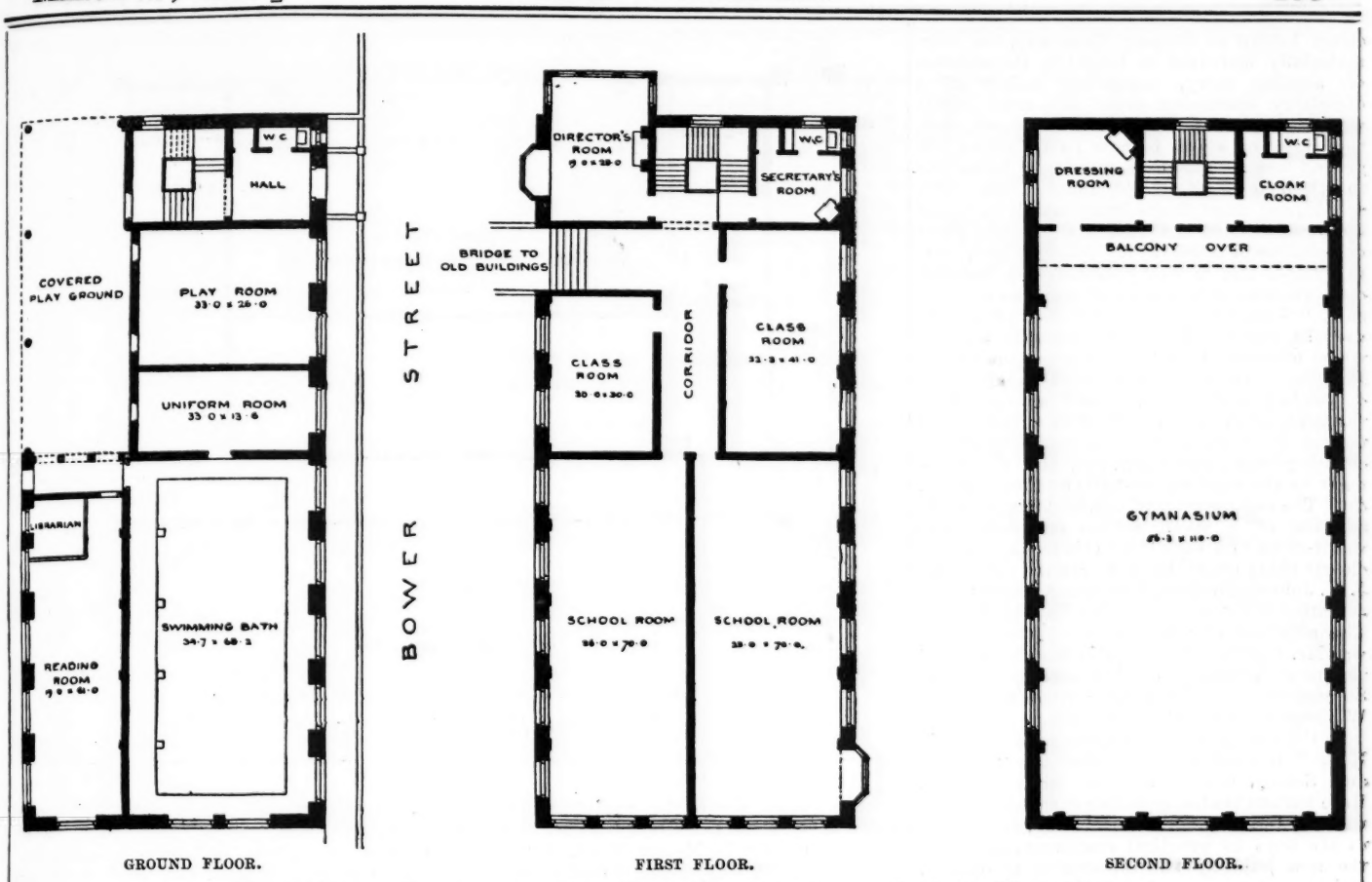
East Elevation.

10 5 0 10 20 30 40 50 60 70 Feet.

PHOTO-LITHO. SPRAGUE & Co 22, MARTINS LANE, CANNON ST. LONDON, E.C.

PRESTON TOWER, EAST LOTHIAN.—Measured and Drawn by Mr. Walter F. Lyon, F.R.I.B.A.





GROUND FLOOR. FIRST FLOOR. SECOND FLOOR.

New Building at Stepney, in connexion with Dr. Barnardo's Homes.—Mr. R. H. Hill, Architect.

auxiliary to the artistic part of an architect's education. It is here that the difference between a well-trained and a half-trained man shows itself; the buildings erected from designs of an artist are marked by a knowledge of the management of light and shade, of grouping of detail, by an adaptation of the features to the height at which they are to be seen, by an anticipation of the effects which perspective will produce on the building, and generally by a knowledge of architecture which is wanting in the work of the man whose only experience is making designs on paper. Such skill it is the highest ambition of an architect to attain to, and such a training as will develope that skill is in the highest and best sense Architectural Education.

Illustrations.

THE TWO BRIDGES.

"God's blessing on the architects who build
The bridges o'er swift rivers and abysses
Before impassable to human feet,
No less than on the builders of cathedrals,
Whose massive walls are bridges thrown across
The dark and terrible abyss of death."

THESE words, from Longfellow's "Golden Legend," have given the idea and title of our illustration, "The Two Bridges." One, of course, being the structural bridge, and the other the emblematical bridge: the cathedral. Longfellow, with that knowledge of Mediæval lore and strong sympathy with Mediæval feeling shown in the "Golden Legend" and others of his poems, places before us in poetical guise Mediæval ideas which have occurred to few poets of the nineteenth century, and it is strange that we should find, in the writings of an American Protestant, so suggestive an interpretation of the Pope's title, "Pontifex Maximus":—

"Well has the name of Pontifex been given
Unto the church's head, as the chief builder
And architect of the invisible bridge
That leads from earth to heaven."

The title, of course, is not of Christian origin, but was held by the Roman Emperors, though it is strange that of all the Imperial titles this is the only one which the Popes adopted,—perhaps for the reason that Longfellow assigns, and perhaps also, because bridge-building itself was regarded more or less as a religious work. As a rule, in ancient times, bridges were erected by monks or clergy, and they were nearly always furnished with some chapel or shrine. In England, for instance, Old London Bridge had, supported on its central pier, a beautiful chapel dedicated to St. Thomas of Canterbury. The bridges of Wakefield and Rotherham, in Yorkshire, still retain chapels placed in a similar position. The celebrated Whittington, Lord Mayor of London, erected a chapel at the end of Rochester Bridge, the ruins of which are still to be seen. The old bridge at Newcastle-on-Tyne appears to have had a chapel in the centre, and another at the end nearest to the town. On the Continent, also, we find many chapels still remaining attached to bridges; at Eszlingen, in Wurtemburg, is a very pretty example, now unfortunately in ruins. The beautiful Capella della Spina at Pisa is well known to all architects and artists; and there is also a very pretty example of a chapel upon a bridge at Basle in Switzerland. Not unfrequently the bridge chapel was placed in a gate or tower over the bridge. This was originally the case at Prague, though at present, in place of a chapel, there is a large representation of the Crucifixion and an altar stone, marking the spot from which St. John Nepomucine was thrown into the water for refusing to reveal the Queen's confession, which, by the way, accounts for the fact that in all Catholic parts of Germany the bridges are adorned with statues of St. John Nepomucine. At Bamberg and Dettelbach, in Bavaria, the Rathhauses are built upon the bridge. That at Bamberg is at present only a modern structure, but the Rathhaus at Dettelbach, which was illustrated some time back in this journal, is a most interesting old building. The bridge chapel at Dettelbach is over the porch of the Rathhaus. Whether Mediæval bridges always possessed chapels it is not at present possible to say, though they certainly were common, especially on large bridges. The "covered bridge," which was not uncommon in the Middle Ages, of which Lucerne, described in the "Golden Legend," is so fine an example, was sometimes adorned with religious pictures representing "The Stations of the Cross." At Lucerne the subjects of the pictures are taken from the "Dance of Death," a legend frequently represented in Mediæval buildings; thus we find John Carpenter, the well-known founder of the City of London School, giving money to have "The Dance of Death" painted upon the walls of the cloister surrounding the cemetery of Old St. Paul's, called "Pardon Church Haugh," and employing John Lydgate to write a poem describing these pictures.

Many bridges, especially those in Italy and Germany, have statues erected over each pier. That of St. Angelo at Rome, those of Prague and Würzburg, are striking examples. Certainly, from an artistic point of view, there is something very striking in having statues placed in such a position; it is, in fact, a subject well worthy of consideration whether our metropolitan bridges could not be improved and rendered less uninteresting by being adorned in such a manner, though, after the length of time which we have had to wait for, and the disputes about the proposed statuary at Blackfriars Bridge, we despair of ever seeing our bridges made ornamental in this way; nevertheless, it is singular that in London we are unable to do what was done in many a second-rate town of Germany and Italy centuries back.

In our illustration a representation of the Crucifixion is shown on the centre pier, as at Dresden and Limburg. The nearer end of the bridge is crossed by the Rath-haus, or town-hall, as at Bamberg and Markt-Brect in Bavaria; this plan of erecting the town-hall over the river, or over a bridge crossing the river, is not uncommon in Germany. They tell you at Bamberg that it originated in a dispute between the Prince Bishop and the town council, and that the town council could not obtain any land in the town to erect their hall upon, because all the land belonged to the bishop, so they built over the water; but if this was the case how are we to account for the same treatment at Dettelbach and Markt-Brect, which were free imperial towns? The bridge, it will be noticed, does not cross the river in a straight line, but is bent so as to present a slight angle up stream, and thus cut the current in half; this idea is borrowed from Prague. The cathedral in our view is designed rather more upon German than English lines, and is joined to another church by an arched gallery crossing the road, of which examples are to be found at Ratisbon, Freising, &c. H. W. B.

EXTENSION OF DR. BARNARDO'S HOMES FOR WORKING AND DESTITUTE LADS, STEPNEY CAUSEWAY.

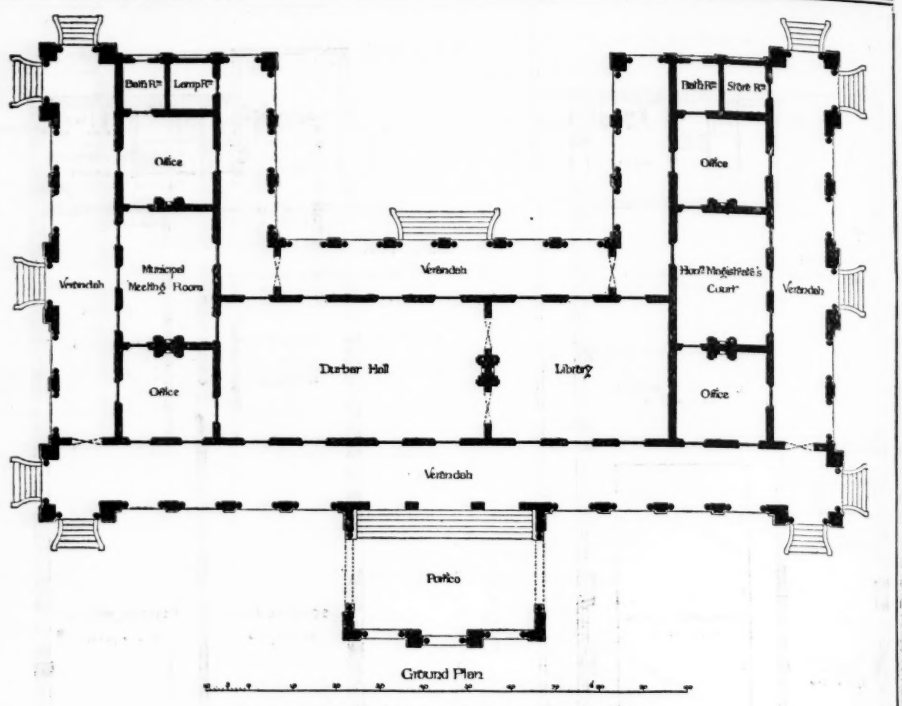
THE large building shown in the first of our two illustrations of these institutions has just been erected, and will shortly be opened, for the purpose of meeting the increased requirements in connexion with Dr. Barnardo's well-known work.

Before describing this new building, however, we may mention that what (though a comparatively new building) is called the "Old Home," on the western side of the narrow

street known as Stepney Causeway, has been materially increased in height by the addition of another story, consisting mainly of a dormitory containing about 100 beds. This work has involved the raising of the old roof, the ridge of which is now 70 ft. above the ground level. The new dormitory forms the fourth floor of the "Old Home," the first, second, and third floors being mainly occupied by dormitories of the same size. Each of these dormitories is about 12 ft. in height from floor to ceiling, and is well provided with through cross ventilation by means of windows on each side, "Tobin's" tubes being also plentifully used as inlets. The dormitories are warmed where necessary by hot-water apparatus by Mr. Boulting. An external spiral iron staircase, descending to the exercise yard, is provided for the safety of the boys in case of fire. The ground floor of the "Old Home" is occupied by offices, counting-house, sale-room, &c., and the basement by the boys' dining-hall, kitchen, bakery, &c. The enlargement of this building, and the addition of a small annexe containing two water-closets on each floor (Underhay's valve-closets being used), has been carried out by Mr. J. H. Johnson, builder, Limehouse, whose representative in the works was Mr. Geo. W. Fowler. The architect of this portion of the building was Mr. Ebenezer Gregg (who has also erected the new infirmary on the eastern side of Stepney-causeway, hereafter described), Mr. Williams being the clerk of works.

In the rear of and connected with the "Old Home" is what may be called the "Factory and School Block," another large building. Here various trades, including carpentry, brush-making, tailoring, and shoemaking, are taught to the boys by practical craftsmen, and when the new building now illustrated is opened, and the schools transferred thereto, there will be available space in the "Factory Block" for materially increasing the trade teaching. For convenience of administration and supervision, this building is connected, by a covered corridor or bridge spanning the exercise yard, with the new building.

The new building, of which Mr. R. H. Hill is the architect, has its main frontage (that shown in the illustration) towards Bower-street, one street westward of Stepney-causeway. (The large buildings previously described are, it will be understood, in the rear of the new building.) As need hardly be said, the building has necessarily been primarily designed for utility rather than display, but architectural treatment has not been ignored. The building is a large one, and the accommodation afforded by its four floors (we give plans of three of them) is very considerable. The area occupied is 135 ft. by 60 ft., and it comprises on the ground-floor a large swimming-bath, library, uniform-room, and play-room; on the first-floor large schoolrooms, class-rooms, Director's and Secretary's rooms; on the second floor a gymnasium 110 ft. by 56 ft., besides ante-rooms. On the third floor is a large room, the same size as the gymnasium, in a single span, the roofs being constructed of iron ribs without intermediate support. This room is to be used as the offices and stores of the Emigration Department, and there are also a large photographic studio, developing-room, &c. The exercise or play ground has been greatly enlarged. The materials used are stock bricks, with Brown's patent pressed bricks for the arches and string courses. The doorway, the mullions to the first-floor windows, and other dressings, are of Drake's artificial stone, coloured red. The roof is covered with purple Penrith slates. The two pedimented panels on the second story will be filled in with the date of erection, worked in mosaic; and it is intended to fill in the frieze between the ground and first floors with an appropriate text of Scripture, also worked in mosaic. The mosaic-work will be supplied by Mr. McColla. We have not space to describe in detail all the points that merit attention in the interior; but we may mention that the floor of the entrance vestibule will be paved with Drake's concrete marble mosaic, with figures emblematical of Faith, Hope, and Charity; that the wrought-iron grilles, &c., in this part of the building are by Messrs. Starkie Gardner & Co.; and the gasfittings by Messrs. Strode & Co.; that the stairs, 6 ft. wide, are of Stuart's "Granolithic," supported on steel girders and stringers; that the staircase has a 6 ft. square well, and is 18 ft. square over all, lighted from the top through the large



New Townhall, Meerut, India.—Ground Plan.

lantern shown above the roof (the finial of which is by Messrs. Starkie Gardner & Co.); that the lifts are by Messrs. Clark, Bunnett, & Co.; that Elsley's apparatus is used for opening the windows of the lantern light; that all the ironwork is by Messrs. W. H. Lindsay & Co., except the roof-principals of the top story, or Emigration Hall: these were supplied by Messrs. Whitford & Co.; that the warming is effected by hot water, on the low-pressure system, the apparatus being supplied by Messrs. Kinnell & Co., of Upper Thames-street; that the Albo-Carbon and Wenham, and the Welsbach incandescent, gaslights are used in some of the rooms; that ventilation is provided for by "Tobin" tubes as inlets and Boyle's mica-flap ventilators as extracts; that the walls of the gymnasium (the large room on the second floor) are of gault bricks with cut and gauged arches of "T. L. B." bricks, Brown's bricks being used for jambs. The floor is of secret-nailed narrow deals, 3¼ in. wide, with ⅛ in. galvanised iron tongues. The lavatories are of Jennings's "tip-up" variety, Underhay's valve closets being adopted. The fire-hydrants and fittings are by Messrs. Tylor & Sons, of Newgate-street. Mr. James Hill has supplied all the locks, and the "Stanley" window-openers and fasteners used in the Board Room. Eastwood's stone-white enamelled bricks, and Stuart's "Granolithic" are largely used in the swimming-bath and elsewhere. The building is 57 ft. high to the top of the main cornice, 81 ft. to the ridge, and 97 ft. to the top of lantern. The general contractors for this building were Messrs. Perry & Co., of Tredegar Works, Bow, to whose obliging representative on the works (Mr. Roberts) we are indebted for much of the information here given. The architect, as before stated, is Mr. R. H. Hill.

INFIRMARY, STEPNEY CAUSEWAY.

THIS building, which is near completion, is situated on the eastern side of Stepney Causeway, in the Commercial-road, partly opposite the Boys' Home (the "Old Home" before mentioned), with which it is connected by a subway passing beneath the street. The new infirmary is built partly upon the site of the old infirmary, erected by Dr. Barnardo several years since, but the present building is considerably larger than its predecessor.

It contains on the basement floor dispensary, waiting-room, lavatory, kitchen, scullery, and knife-room, nurses' kitchen, pantries, clean and soiled linen rooms, with shafts from the upper floors, and food-lift the whole height of the building, larders, servants' hall and bedroom, with south passage (on right-hand side of the building) from Stepney-causeway leading to the offices, and north passage (left-hand side of the building) leading to the mortuary, with the boiler-house and coal-store.

On the ground-floor (see plan) are the principal entrance, reception-room, staff dining-room, committee-room, girls' play-room, ward, operating-room, linen, bath-room, lavatory, &c.

On the first, second, and third floors are matron's sitting and bed-rooms, nurses' room, large, small, and isolated wards and sculleries, linen-rooms, bath-rooms, lavatories, &c.; and on the fourth floor are nurses' room, tank-room, and a large asphalted exercising flat.

The ground-floor is 11 ft. in height, and all the upper floors are 12 ft. in height.

There are ordinary fireplaces in each of the several wards and apartments, supplemented by hot-water heating apparatus where necessary.

The works have been carried out under the supervision of the architect, Mr. Ebenezer Gregg, by Mr. Wm. Shepherd, of Bermondsey New-road; Mr. Williams acting as clerk of works, and Mr. Boulting fixing the hot-water and cooking apparatus, and a supplementary system of heating by hot water for all walls, staircases, and corridors. The total cost of this building has been about 8,500*l*.

MEERUT TOWN-HALL.

THE establishment of municipalities in the cities and chief towns of India has given a great impetus to the construction of municipal or town-halls. We give an illustration of one of these buildings recently erected at Meerut, in the North-Western Provinces of India. We must confess that it is a design we should have declined entirely to illustrate if it had been the work of an English architect in this country; but its illustration may be useful as showing the kind of European architecture which is being put up in India under the direction of the engineers to whom so much of the Government building in India is entrusted.

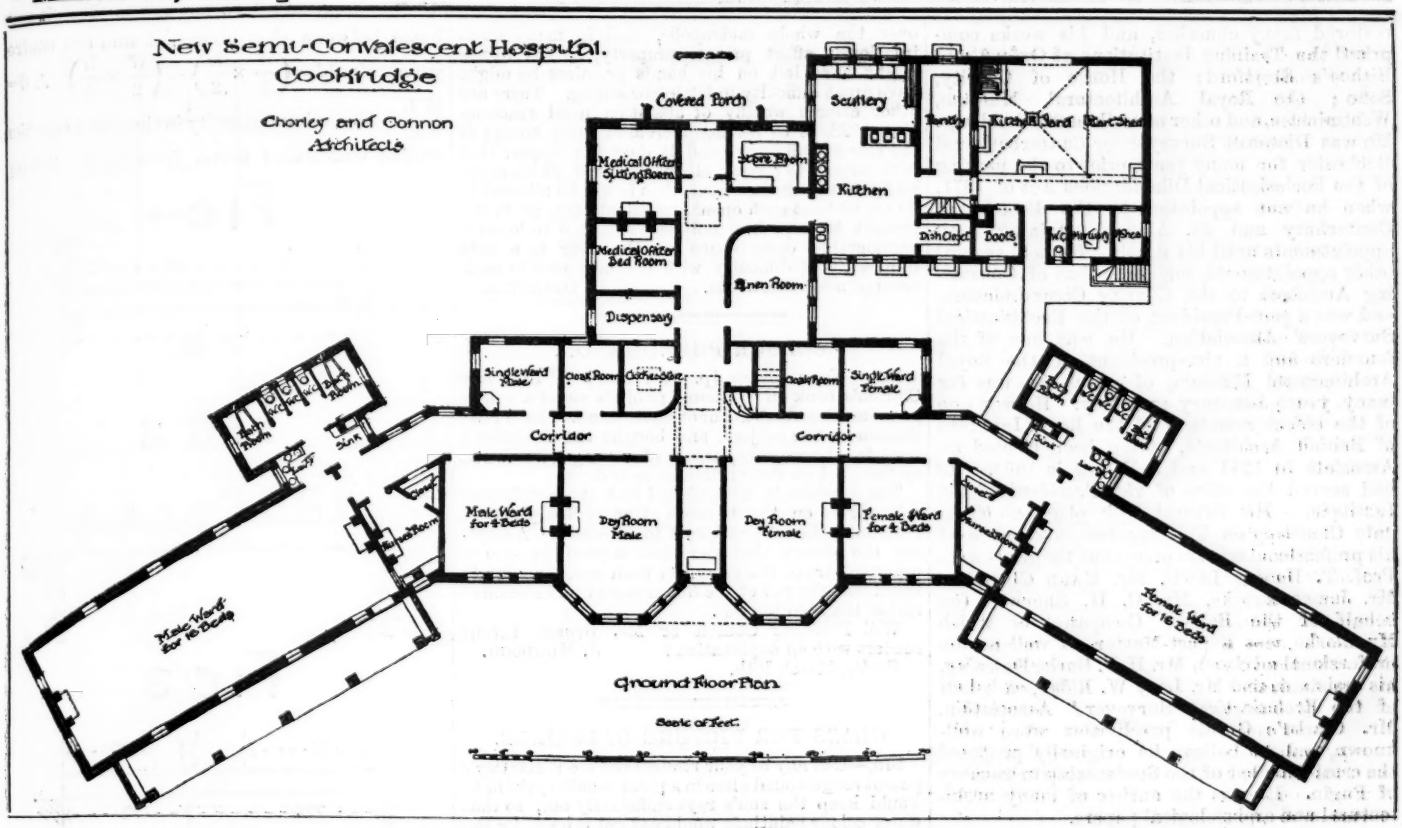
The walls are of brickwork, the cornices and mouldings coloured white, and the verandah piers coated with Portland cement. The roof is arched in brick, and the thrust of the arches taken by iron ties. The doors are of massive teak wood, with brass furniture in the two public rooms, and iron fittings in the others.

The cost of the building, grounds, and entrance-gates, &c., has been about 10,000*l*.

The building was designed by Lieutenant Kunhardt, R.E., whose design was selected in a competition, and was carried out under the superintendence of Mr. G. R. Bird.

NEW SEMI-CONVALESCENT HOSPITAL, COOKRIDGE, LEEDS.

THIS building has been erected as a Jubilee gift from Mr. John North, of Leeds. It is intended for the reception of semi-convalescents discharged from the Leeds Infirmary, who are not sufficiently re-established in health to be safely returned to homes, not often of a character likely to conduce to the rapid



recovery of patients still weak from illness or operations.

The site is an elevated one, with fine open aspect, facing south-west, and adjoining a convalescent home erected some years ago from the designs of Mr. Norman Shaw.

All the accommodation for patients is on the ground-floor, the upper stories of the central block being devoted to nurses' and servants' rooms. The plan sufficiently shows the arrangements adopted and the disposition of the various rooms. The alignment of the large wards has been adopted for the purpose of allowing a more even distribution of sunlight than would result from keeping the front in one line. The ventilation of the wards is attained by upcast shafts around the smoke-flues and by fresh-air inlets between the heating pipes. The whole of the buildings are warmed by steam-pipes, supplemented with Teale's fireplaces in every room. The hospital is built of brick with hollow walls, and with local stone dressings. The upper floors are faced with rough-cast, and the roofs are covered with green Westmoreland slates. The contractor for the brickwork, &c., is Mr. C. Myers; for joiners' work, &c., Mr. Banks Mawson; for plumbers' work, &c., Mr. L. Woffenden; for slaters' work, Messrs. Sharp & Harper; for plasterers' work, Mr. J. Mountain; for painters' work, Mr. J. W. Walker, all of Leeds. The heating and cooking arrangements are by Messrs. Bradford & Co., of Manchester. The architects are Messrs. Chorley & Connon, of Leeds.

CHURCH MISSION-ROOM, TUNBRIDGE WELLS.

THIS building, of which we give an illustration, has been recently erected by a local committee, of which the Rev. Canon Hoare was chairman. It stands upon ground presented by the High Brooms Brick and Tile Company, from whom the bricks and tiles were purchased.

The exterior is faced with red stocks, with Bath stone dressings, a small amount of timber and plaster work being introduced into the gable, and is roofed with red tiles and surmounted by a turret covered with oak shingles.

The interior is arranged so that the chancel can be shut off from the mission-room (54 ft. by 24 ft. 6 in.) and parish room (20 ft. by 17 ft.), by means of sliding screens. The seating accommodation is 350.

The necessary works were carried out by Mr. John Jarvis, builder, of Tunbridge Wells, from the designs and under the superintendence of the architect, Mr. Brett A. Elphicke.

PRESTON TOWER, EAST LOTHIAN.

FOR an article descriptive of this tower see p. 190, *ante*. The illustrations are from measured drawings by Mr. Walter F. Lyon, F.R.I.B.A.

THE ARCHITECTS' BENEVOLENT SOCIETY.

THE thirty-eighth annual meeting of this Society was held on Wednesday afternoon last in the Council Room of the Royal Institute of British Architects, 9, Conduit-street. There were present Messrs. Thomas Cundy (in the chair), Prof. T. Hayter Lewis (Hon. Treasurer), and Messrs. W. M. Fawcett, John Hebb, William Grellier, Geo. Scamell, G. J. J. Mair, Thos. M. Rickman, W. Hilton Nash, C. F. Hayward, E. C. Robins, H. H. Collins, George Inskipp, and Wyatt Papworth.

The Hon. Secretary, Mr. William H. White, read the report of the Council, which contained the following passages:—During the year 1887 your Council have held seven meetings, at which they have distributed in grants the sum of 514*l.* among thirty-seven persons, a slight increase upon the preceding year, when the sum of 509*l.* was given away in grants to thirty-two persons. Two pensions of 20*l.* each have been paid, making a total payment of 554*l.* The amount received by subscriptions has decreased, being only 340*l.* 18s., as against 366*l.* 7s. in 1886; but, considering the fact that during the past year numerous subscriptions have been solicited throughout the country for other and exceptional objects, the decrease in the subscriptions of benevolent societies is scarcely to be wondered at, and, the Society having obtained eleven new subscribers, notwithstanding the above fact, there need be no apprehension of a falling off in the number of its supporters. Most of the new subscribers are architects in Nottingham, obtained through Mr. Fothergill Watson, Local Honorary Secretary in that town. The donations received during the year amount to 140*l.* 1s. 6d., including a legacy of 75*l.* by the late Mr. George Devey, who was for many years a subscriber to the Society.

Your Council and the Society have to deplore the decease of two prominent members, viz., Mr. Edward I'Anson, your President, and Mr. George Godwin, one of the Trustees. The former had long been a contributor, and was a Member of Council as early as the year 1851. Mr. Godwin was also one of the Society's earliest supporters, being an annual subscriber until 1863, from which year until his decease he was a constant donor. On the death of Mr. G. E. Street, R.A., in 1882, he was elected one of the Trustees, and it was only last year the Report of your Council stated that "the generous proposition of Mr. George Godwin, F.R.S., to contribute 100*l.* to the funds has been the means of adding 600*l.* New 3 per cent. Stock to the invested capital of the Society." Your Council have to day had laid before them a letter from the late Mr. Godwin's executors, notifying the bequest of 100*l.* free of duty, the cheque for which has been received; and they have also been informed of a bequest of 50*l.* by the late Mr. J. R. Botham, who for a long period was a contributor to the Society. Another well-known architect, Mr. Joseph Clarke, F.S.A., has passed away. He was a subscriber from 1851, and was first elected a Member of Council in 1863.

The total amount of the invested capital is now 7,026*l.* 14s. 10d., and, taking into account the above-mentioned 150*l.*, the total capital is nearly 7,350*l.*, an increase of almost 1,000*l.* since 1885, when it amounted to about 6,430*l.*

In March last it was proposed that a dinner should be held with the object of augmenting the funds of the Society, and, through the kindness of your Member of Council, Mr. Banister Fletcher, one of the Court of the Carpenters' Company, Carpenters' Hall would have been lent for that purpose. But your Council regret that it was found impracticable to make the necessary arrangements during the past year.

The death of Mr. George Godwin has caused a vacancy in the number of Trustees, to fill which the Council have nominated Mr. Henry Currey, who, should the annual general meeting approve, has consented to hold the office. The trustees of the Society will consequently be Mr. Charles Barry, Mr. Thomas Cundy, and Mr. Henry Currey.

The accounts, audited by Messrs. Charles Fowler and George Inskipp, show that although the subscriptions for the past year have fallen off, the total of the income receipts is slightly in excess of that of the previous year, in consequence of the increased capital; and, while congratulating the Society upon that fact, it is most desirable that the capital shall be still further augmented.

Mr. Alfred Waterhouse, R.A., was unanimously elected President, and Messrs. R. H. Carpenter, E. B. I'Anson, George Inskipp, J. A. Gotch, and E. N. Clifton were elected members of Council in place of Messrs. John Hebb, R. St. A. Roumieu, Thomas Cundy, and George Scamell, retiring by rotation. Messrs. Charles Fowler and H. H. Collins were elected auditors.

OBITUARY.

Mr. Joseph Clarke, F.S.A.—We record with much regret the death of this well-known architect, which occurred on the 9th inst., at his residence, 22, Craven-hill, Hyde Park, at the age of sixty-eight, after an illness of a few months. His end was no doubt hastened by the death of his wife a few weeks ago. His principal practice was in ecclesiastical and semi-ecclesiastical architecture. During the earlier years of his professional career he enjoyed a very large practice in school building, and he wrote a book, at one time well-known, on "Schools and School-houses." He built and

restored many churches, and his works comprised the Training Institutions at Oxford and Bishop's Stortford; the House of Charity, Soho; the Royal Architectural Museum, Westminster, and other miscellaneous buildings. He was Diocesan Surveyor for Canterbury and Rochester for many years prior to the passing of the Ecclesiastical Dilapidations Act of 1871, when he was appointed to the dioceses of Canterbury and St. Albans, retaining both appointments until his death. He held several other appointments, including that of Consulting Architect to the Charity Commissioners, and was a past-President of the Ecclesiastical Surveyors' Association. He was one of the founders and a vice-president of the Royal Architectural Museum, of which he was for many years honorary secretary. He was one of the oldest members of the Royal Institute of British Architects, having been elected an Associate in 1841 and a Fellow in 1853. He had served the office of vice-President of the Institute. His funeral took place at Highgate Cemetery on Tuesday last, and amongst his professional friends present at the grave were Prof. T. Hayter Lewis, Mr. Ewan Christian, Mr. James Brooks, Mr. C. H. Shoppee (on behalf of the Bakers' Company, of which Mr. Clarke was a past-Master, as well as the professional adviser), Mr. H. P. Burke Downing, his assistant, and Mr. Lacy W. Ridge, on behalf of the Ecclesiastical Surveyors' Association. Mr. Clarke's Gothic proclivities were well-known, and we believe he originally proposed the establishment of the Studentship in memory of Pugin. He was the author of many architectural and archæological papers.

DR. DÖRPFELD'S THEORY AS TO THE ACROPOLIS BUILDINGS.

SIR,—In your paper of March 3rd inst. [p. 151] you gave a brief notice of Dr. Dörpfeld's theories respecting the ancient Temple of Minerva on the Acropolis of Athens. I have the highest regard for Dr. Dörpfeld, and admiration of his talent; but, as respects this temple, I have a conviction, almost amounting to certainty, that he is mistaken on some very important particulars. And I hope to be able before long to produce evidence to prove that the great temple on the Acropolis at the time of the Persian siege was not that of which he has discovered the site, close to the Erechtheum, but the earlier Parthenon, as generally supposed. F. C. PENROSE.

68, *St. Paul's Churchyard*,
March 13, 1888.

METROPOLIS MANAGEMENT AND BUILDING ACTS AMENDMENT BILL.

SIR,—Will you allow me to direct the attention of your readers,—especially of owners of property, surveyors, and builders,—to "The Metropolitan Board of Works (Local Management, &c.) Bill," No. 88, now before Parliament, which contains some proposals of a somewhat startling character. I would specially direct attention to Clauses 20 to 23, 26, and 30, which, with the exception of clause 23, propose to make more stringent the already extremely irksome and irritating character of the Metropolitan Board's methods of control.

Clause 23 appears to be specially designed to prevent owners from utilising their lands, except as the Board may dictate, and those who have experience of applications to the Board under existing legislation unfortunately know what this means. The clause as drawn will, moreover, seriously interfere with the provision of dwellings for the working classes.

The Bill is down for second reading on Wednesday, the 18th of April, and, if allowed to pass in its present form, will be disastrous to the owners of property in the metropolis.

LEX.

London, 14th March, 1888.

SIR,—The Metropolitan Board of Works has a Bill before Parliament called the Metropolis Management and Building Acts (Amendment) Act, 1888, several clauses of which should be carefully considered by the public. Clause 12, which has the simple heading "Amendment of 57 Geo. III., c. 29" (Michael Angelo Taylor's Act), proposes to enable any Vestry or District Board, altering, widening, turning, or extending any of the streets, &c., under the said Act of 57 Geo. III., c. 29, to take *portions only* of land, and, if a jury see fit, *portions* of buildings also, for the purpose, which would be granting them very great and extraordinary powers over the whole metropolis, and in many cases injuriously affect private property, as the owner might have left on his hands premises he might have great difficulty in letting or selling. There are other clauses worthy of attention until reaching Clause 28, as to leaving increased open spaces at the rear of buildings; and it does not appear that with respect to houses, all the rooms of which could be lighted from the street, that it will be allowed to do so, without such open ground at rear, as in the present Metropolitan Building Act, and to leave a considerable open space at the rear is a case frequently of difficulty with corner houses in well-covered neighbourhoods. OBSERVER.

COLOUR PHENOMENON.

SIR,—Your review [p. 179, *ante*] of Professor Church's book on "Colour" reminds me of a colour phenomenon which I cannot understand. I have read Benson on the subject, and bought the Professor's book for the express purpose of getting light on the matter, but on this particular he is dark.

The question is, why, when I look through flashed ruby glass on the blossom of an ordinary scarlet geranium, the latter appears to be white. Accepting the theory that red glass is nearly opaque to other colours of the spectrum than red, one would think that the red of the flower would be intensified rather than blotted out.

Will Professor Church or Mr. Benson favour readers with an explanation? J. MURDOCH.

Bexley, March 10th.

GLASS FOR PICTURE GALLERIES.

SIR,—Can any of your readers tell me if Hartley's patent rough-rolled glass in a picture-gallery skylight would keep the sun's rays sufficiently out, so that water-colour paintings would not get injured by the strong sun-light? J. McW.

The Student's Column.

IRON.

XI.—FLANGE STRESSES.

HAVING shown graphically the varying intensity of the stresses acting in beams loaded in different ways, we will now give the formulæ by which their definite values are determined. In fig. 1, we will suppose the semi-girder (L = length and d = depth) to be acted upon by a weight = W. We require to find the strain on the flanges at the supports. It is evident that the total forces acting on the beam must balance; therefore the effect of the weight must be balanced by the flange stresses, and the moment of the weight at the support W L to be balanced by the moment of the stress Sd, where S = strain in one flange. Arranging the equation we obtain $S = \frac{WL}{d}$.

The moment of a force is the product of the force into its distance measured at right angles from the point round which moments are taken. By calling x the distance from the unsupported end to any other point, where it is required to know the stress, we have for the equation $S = \frac{W x}{d}$. If the girder is uniformly loaded, we can consider the load as concentrated at its centre of gravity, and, therefore, acting at $\frac{L}{2}$, then the equation for the strain in the flange at the supported end becomes $S = \frac{W L}{2d}$, and the strain at any point calling w the weight per unit of length, is obtained by the equation $S = \frac{w x^2}{2d}$.

With the girder supported at both ends, and loaded in the centre, the reaction of each support $= \frac{W}{2}$, and, taking moments about the centre of the girder with either reaction, we obtain the equation for the stress in the centre of the flanges $Sd = \frac{W}{2} \times \frac{L}{2}$ $\therefore S = \frac{WL}{4d}$. And for the stress at any point, $Sd = \frac{W}{2} \times x$ (x being measured from the nearest abutment) $\therefore S = \frac{W x}{2d}$.

For a girder loaded uniformly and supported at each end, the reaction as before will be $\frac{W}{2}$, and by taking the moment of the reaction of one of the supports about the centre, and subtracting the moments of the loads on the beam between that abutment and the centre, we obtain $Sd = \left(\frac{W}{2} \times \frac{L}{2}\right) - \left(\frac{W}{2} \times \frac{L}{4}\right)$ $\therefore S = \frac{WL}{8d}$. The minus quantity in the above equation will be understood better from fig. 2. Calling

FIG 1

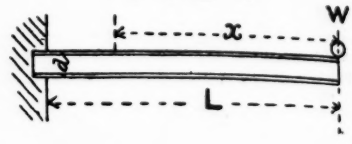


FIG 2

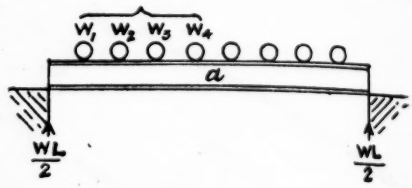


FIG 3

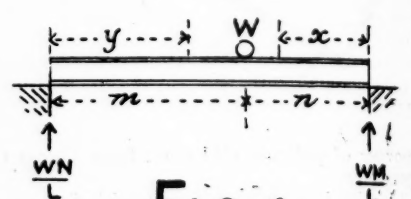
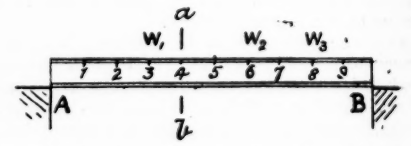


FIG 4



all the forces acting in the direction of the hands of a watch *plus*, and those in an opposite direction *minus*, it is evident that equilibrium cannot exist unless the algebraic sum of all the forces = 0. The forces acting on the beam about the point marked a, having a minus sign will be w_1, w_2, w_3, w_4 (the sum of which here $= \frac{W}{2}$) plus the stresses in the flanges. The reaction in this case $= \frac{W}{2}$ acting in the opposite direction will have the plus sign. Therefore the statement of the equation will be as follows: $-\frac{W}{2} \times \frac{L}{2} + Sd - \frac{W}{2} \times \frac{L}{4} = 0$. Arranging $\frac{WL}{4} - \frac{WL}{8} = Sd$ $\therefore \frac{WL}{8d} = S$ as before.

For a beam loaded at one intermediate point see fig. 3, where m and n = the segments into which the weights divide the beam, the equation for the flange stress at the point where the weight is acting becomes $\frac{W m}{L} \times n = Sd$ $\therefore S = \frac{W mn}{Ld}$, and the flange stress at any point between the weight and the right abutment may be expressed by the equation $\frac{Wmx}{Ld} = S$, and for any point between the weight and the left abutment by the equation $\frac{Wny}{Ld} = S$.

When a beam is acted upon by several loads of different amounts, and placed unsymmetrically as in fig. 4, the reactions of the supports are equal to the sum of the reactions of the weights acting separately. In this case where the girder is divided into 10 units of lengths the reaction at $B = \frac{3W_1 + 6W_2 + 8W_3}{10}$, and the reaction at A = ($W_1 + W_2 + W_3$) − reaction at B. The stress in either flange on line ab, where R_1 = reaction at A, R_2 = reaction at B, is expressed by the equation $R_1 4 - W_1 1 = Sd$, arranging $S = \frac{R_1 4 - W_1 1}{d}$, and the flange stress at any other point can be expressed by a similar equation.

RECENT PATENTS.

ABSTRACTS OF SPECIFICATIONS.

2,412, Fire-bars, &c. H. E. Hoole.

By a modification of the usual casting, the hooks screwed into the bars are, according to this invention, dispensed with; and the bars may easily be detached from the grate for cleaning and repairs. The front cheek or side piece which carries the bars is made to dovetail in with the main casting of the stove, and is thus detachable.

5,164, Machinery for Cutting Stone. F. Butterfield.

This invention relates to an improvement on a previous patent, and has in view a slow feeding movement of the table carrying the material to be treated; but a quick return motion thereof after such treatment is provided for.

6,741, Carpenters' Squares. J. Klif.

The subject of this invention is a combination of a square or slotted scale with another or two other scales, by sliding them to different marks set off on the scale, angles, bevels, squares, may be set out, and measurements useful in staircase work be arrived at quickly.

13,634, Flushing Cistern. W. H. Day and G. Dimmer.

The improvement which is the subject of this invention consists of a hollow cone placed inside of the cistern fixed to the bottom of the same, and supported by three short bearings, which leave sufficient room to allow the cone to fill with air. This air compresses itself, and prevents the water rising under the cone. A valve is attached at the top part of the cone, and so soon as by this valve the air escapes the water fills the cone, and it immediately syphons.

13,933, Connecting Branch and Main Pipes. J. Wotherspoon.

According to this invention, a conical screw-threaded hole is made in the main pipe for the reception of the service or branch pipe, the end of which is similarly tapered and screw-threaded, so that it can be screwed by means of a wrench into the main pipe. A fixed or solid collar is provided on the branch pipe a little beyond the tapered screw part to form a shoulder, which rests on a saddle-piece, the central opening of the same being of such a diameter as to allow the pipe proper to pass through. The service-pipe is secured to the main pipe by a strap bolt, on screwing up the nuts of which the saddle-piece is pressed against the collar, thus supporting the branch pipe, and forming a suitable joint.

16,858, Ventilating and Disinfecting House-drains. J. Smith.

By this invention, the inlet pure-air chamber is made wider at the top than at the bottom. The said air-chamber terminates at the surface of the roadway, footpath, or other level, with a locked grating, the bottom of the air-chamber being connected by means of a pipe, of earthenware or other material, to a middle junction about the level of the sewer pipe. The outlet for bad air is connected to a shaft, preferably about 25 ft. high. A box containing deodorising substance, which percolates into water, and then is delivered by pipes into the sewer, is employed to disinfect the gases and prevent their escape by means of the inlet.

17,503, Spirit Levels. G. Cook.

In carpenters' spirit levels the bubble is, according to this invention, made of a spindle shape, and may be much more easily seen, and the spirit is under much greater protection, the glass being covered to secure it from breakage or accident.

NEW APPLICATIONS FOR PATENTS.

Mar. 2.—3,181, E. Hargreaves, Wire Door-spring Fittings.—3,197, W. Morier, Whitewash and Distemper Brushes.—3,202, W. Temple, Drying Bricks, &c.—3,209, W. Hall, Preventing the Rattle and Vibration of Windows, Sashes, &c.—3,227, F. and C. Smith, Locks and Bolts.—3,229, W. Scott Moncrieff, Valve Water-closets.—3,236, H. Whitehouse and J. Clifford, Sash Fasteners.—3,249, W. Stokes, Gully Traps.

Mar. 3.—3,295, S. Willett, Window Fastener.—3,306, H. Carter and J. Aynsley, Spring Hinges for Doors, &c.—3,309, P. Corcoran, Machines for Dressing and Working Stone.—3,324, S. Coombs, Lever Door Check.

Mar. 5.—3,331, E. Lightowler, Attaching Name-plates to Doors and Gates.—3,344, W. Beames and J. Madeley, Flushing-cisterns.—3,385, E. Lofts, Stoves, Ranges, &c.

Mar. 6.—3,392, J. Bousfield, Draught-increasing Tube for Bottoms of Smoky Chimneys.—3,408, E. Redwood, Wood Finishing.—3,412, H. Birkbeck, Illuminated Wind Vanes.—3,417, J. Cochrane, Flushing-cistern.—3,419, G. Brown, Kilns for Drying or Burning Bricks, Pipes, &c.—3,438, W. Thompson, Supplying and Regulating Heat to Buildings, &c.—3,447, D. Gillies, jun., Axle End Guides for Mortar and Clay Mills.—3,467, L. Hammond, Hinge.

Mar. 7.—3,487, G. Mitchell, Waste Preventing Valves for Water-closets, &c.—3,513, W. Rigby, Dressing, Grinding, or Cutting Stone.—3,516, C. Brothers, Ventilators.—3,524, H. Goodridge and S. Fairland, Window Fastenings.

Mar. 8.—3,555, C. Barrow, Window-sashes.—3,560, J. Kaye, Handles for Doors and Locks, more particularly on the push-and-pull system.—3,562, W. Day and G. Dimmer, Water-waste Preventing Syphon Cistern.—3,568, J. Walker, Roses for Door-knobs.—3,619, F. Ryan, Water Cocks and Taps.

PROVISIONAL SPECIFICATIONS ACCEPTED.

15,835, T. Harries, Artificial Stone.—935, S. Turner, Roof Tile.—1,238, J. Anderson, Water-closets.—1,394, C. Heaton, Ornamental Work for Walls, &c.—1,444, W. Pert and W. Weston, Coating Lead Cisterns.—1,603, J. Currall, Fireplaces, Kitcheners, and Ranges.—1,612, W. Foulis, Fireplaces.—1,689, J. Smith, Portland Cement.—2,228, J. Crowther and W. Payne, Pivots of Fanlights, &c.—2,298, J. Jetten, Rails, Rafters, and Purlins in Wood or Metal for Fixing, Glass, Slates, &c.—2,304, S. Sudworth and E. Berry, Fireproof Batten Lights for Electrically Lighting the Stages of Theatres and other Buildings.—2,455, F. Crane, Varnishes and Lacquers.—2,708, A. Stevens, Securing Scaffolding.—2,713, W. Burr, Preventing Window-sashes, &c., Shaking and Rattling.

COMPLETE SPECIFICATIONS ACCEPTED.

Open to Opposition for Two Months.

3,216, W. Wall, Door-bolt with Automatic Indicator.—5,201, C. Heaton, Ornamental Cloisonné Mosaic Work.—6,548, S. Fisher, Wall or Ceiling Coverings.—6,582, P. P. Molyneax, Paint or Coating.—16,593, E. Throp, Balancing and Holding the Sashes of Sliding Windows.—1,918, G. Berry, Chimney Cowls.

RECENT SALES OF PROPERTY.

ESTATE EXCHANGE REPORT.

MARCH 5.

By E. MILLARD.

Stoke Newington—55, Nevill-road, 76 years, ground-rent 6*l.* 6s.	£890

By BEARD & SON.

Bethnal Green—1 and 3, St. Jude-street, freehold...	840
Mile-End—34, St. Peter's-street, 42 years, ground-rent 3*l.* 8s.	300
13 and 15, St. Peter's-street, 42 years, ground-rent 6*l.* 6s.	460
Bayswater—71, Cornwall-road, 71 years, ground-rent 10*l.*	715

By J. P. HOPE.

Acton—22 and 24, Shaftesbury-road, 88 years, ground-rent 5*l.*	210

MARCH 6.

By W. WEATHERLEY.

Hastings, George-street—An income of 100*l.* a year, with reversion in 25 years to the Anchor public-house	1,720

By D. A. BALL.

Barnsbury—24, Thornhill-crescent, 61 years, ground-rent 8*l.*	450
Stoke Newington—31, Broughton-road, 72 years, ground-rent 5*l.* 5s.	335

By W. KNIGHT.

Hoxton—116, Murray-street, 54 years, ground-rent 4*l.* 4s.	335

By E. E. CROUCHER & Co.

Kensington—33, Victoria-road, 41 years, ground-rent 14*l.*	1,920
Gray's Inn-road—35, Britannia-street, and 34 to 42 even, Wicklow-street, freehold	1,010
Harrow-on-the-Hill—Two plots of freehold land, 14a. 3r. 17p.	3,525

By DEBENHAM, TEWSON, & Co.

Barnsbury—49, Pulteney-street, and Broughton Cottage, 16 years, ground-rent 6*l.*	275
Haverstock Hill—99, Adelaide-road, 60 years, ground-rent 5*l.*	600
Hammersmith—18 to 30 even, Great Church-lane, 91 years, ground-rent 25*l.*	1,610
Kensington—20, Ebury-street, 46 years ground-rent 6*l.*	1,600
Wimbledon—16, Lansdown-road, freehold	1,460
Bloomsbury—2, Devonshire-street, freehold	1,860

By J. GODWIN.

Dalston—33, 35, and 37, Richmond-road, 38 years, ground-rent 17*l.* 10s.	925

By J. W. NEIGHBOUR.

Greenwich—54, Greenwich-road, freehold	415
4 and 5, Cottage-place, freehold	520

MARCH 7.

By W. HOLCOMBE.

East Finchley—2, Kissick Villas, freehold	215

By ELLIOTT, SON, & BOYTON.

Portland Estate—66, Great Portland-street, and 17, Little Titchfield-street, 8½ years, ground-rent 40*l.*	515
Grosvenor-square—57, Park-street, 11½ years, ground-rent 55*l.*	750

By FAREBROTHER, ELLIS, CLARK, & Co.

Marylebone-road—33, Homer-street, freehold	605

MARCH 8.

By HERRING, SON, & DAW.

Streatham, Leigham Court-road—The residence called Hetherset, and 1½ acre	4,000
The lease of 3a. 3r. 26p. adjoining, term 6½ years	50

By C. C. & T. MOORE.

Forest Gate—88, Osborne-road, 88 years, ground-rent 11*l.* 4s.	415
West Ham—8 to 14 even, Marcus-street, freehold...	500
24 to 30 even, Marcus-street, freehold	500
1 to 11 odd, Myra-street, freehold	700
Old Ford—55 and 57, Roman-road, freehold	960
Leytonstone—Ground-rents of 16*l.*, reversion in 79 years	330
West Ham—56 and 58, Evesham-road, 91 years, ground-rent 10*l.*	250

By E. STIMSON.

Lambeth, Little Windmill-street—A plot of freehold land, area 17,000 feet	£3,050
Newington, Great Dover-street—A plot of freehold land, area 10,352 feet	4,200
Tabard-street—A plot of freehold land, area 8,320 feet	5,700
Greenwich, Lower East-street—A plot of freehold land, area 1,749 feet	400
Walthamstow—4 to 7, Mission-terrace, freehold	4,150
New Cross-road—Residence called The Limes, 54 years, ground-rent 11*l.* 16s.	510

By PROTHEROE & MORRIS.

Leytonstone, Wallwood-road — Penton House freehold	400
Norton and Hermon Houses, freehold	800

By MOSS & JAMESON.

Portland Estate—27 and 38, Saville-street, 11 years, ground-rent 28*l.*	760

By WALKER & LAYTON.

Kilburn, Carlton-road—A plot of freehold land	50

MARCH 9.

By DALE & SON.

Mile End—50, Nicholas-street, 42 years, ground-rent 2*l.* 11s.	280
18 and 20, Buckridge-street, 76 years, ground-rent 7*l.*	295

By T. B. WESTACOTT.

Kilburn—265, High-street, 42 years, ground-rent 5*l.* 17s.	540
Upper Holloway—45, St. John's-road, 60 years, ground-rent 7*l.* 10s.	195
Oakley-square—36, Charrington-street, 57 years, ground-rent 7*l.* 2s.	650
West Norwood—19, Chatsworth-road, 93 years, ground-rent 10*l.*	670

MEETINGS.

SATURDAY, MARCH 17.

Architectural Association.—Visit to New Hall of the Cutlers' Company. 3 p.m.

Society of Arts.—Professor J. Oliver Lodge, F.R.S., on "The Protection of Buildings from Lightning." II. 3 p.m.

Association of Municipal and Sanitary Engineers and Surveyors.—Home Counties' District Meeting at Maidstone. (Town-hall, 12 Noon.)

Civil and Mechanical Engineers' Society.—Visit to the Midland Railway Depôt, St. Pancras. 3 p.m.

MONDAY, MARCH 19.

Royal Institute of British Architects.—(1) Mr. H. Hucks Gibbs, M.A., F.S.A., will read a memoir of the late Right Hon. A. J. B. Beresford-Hope, Past-President. (2) Mr. C. Wethered on "A Fortnight in Switzerland with Viollet-le-Duc: A further Sketch of his Life and Works." 8 p.m.

Surveyors' Institution.—Adjourned discussion on Mr. Dundas Gardiner's paper on "The Law relating to Ancient Lights." 8 p.m.

Society of Arts (Cantor Lectures).—Professor W. Chandler Roberts-Austen, F.R.S., on "Alloys." II. 8 p.m

Leeds and Yorkshire Architectural Society.—Nomination of officers. 7 30 p.m.

TUESDAY, MARCH 20.

Society of Arts (Applied Art Section).—Mr. William Simpson on "What Style of Architecture should we Follow?" (Professor T. Hayter Lewis will preside.) 8 p.m.

Institution of Civil Engineers.—Discussion on Mr. P. W. Williams's paper on "Economy-Trials of a Non-Condensing Steam-Engine—Simple, Compound, and Triple." 8 p.m.

Builders' Clerks' Benevolent Institution.—Annual Dinner, Holborn Restaurant. The President (Mr. J. W. Hobbs, Mayor of Croydon) in the chair. 6 p.m.

WEDNESDAY, MARCH 21.

Society of Arts.—Mr. T. H. Thornton, C.S.I., on "The Evils of Canal Irrigation in India, and their Prevention." 8 p.m.

British Archæological Association.—Mr. J. Romilly Allin, F.S.A., Scot., and Mr. A. G. Langdon on "Early Christian Monuments of Cornwall." 8 p.m.

Royal Meteorological Society.—(1) Dr. W. Marcet, F.R.S., on "Atmospheric Electricity." (2) Mr. G. J. Symons, F.R.S., on "The non-existence of Thunderbolts." 7 p.m.—Subsequently an Exhibition of Apparatus connected with Atmospheric Electricity, including Lightning Conductors, will be held.

St. Paul's Ecclesiological Society.—Mr. Thomas Garner on "The Altar Screen at St. Paul's Cathedral." 7·30 p.m.

Builders' Foremen and Clerks of Works' Institution.—8·30 p.m.

Liverpool Engineering Society.—Further Discussion on Mr. Turner's paper on "Filtration of Sewage. 8 p.m.

THURSDAY, MARCH 22.

Royal Institute of British Architects.—Special General Meeting to Consider Draft of Petition to the House of Commons against the "Architects' Registration Bill." 8 p.m.

Society of Telegraph-Engineers and Electricians.—Professor A. W. Rücker, M.A., and Mr. C. V. Boys on "Electrical Stress." 8 p.m.

Parkes Museum of Hygiene.—Mr. A. S. Murray on "Physical Training of the Greeks and Romans." 5 p.m.

Society of Antiquaries.—8·30 p.m.

Edinburgh Architectural Association.—Mr. Thomas Arnold on "Leading Architects of the Eighteenth Century." 8 p.m.

FRIDAY, MARCH 23.

Institution of Civil Engineers (Students' Meeting).—Mr. H. W. Hodge on "Principal Types of American Swing Bridges." 7·30 p.m.

SATURDAY, MARCH 24.

Architectural Association.—Visit to Meistersingers' Club House, St. James's-street, W. Assemble 3 p.m. Passes.

St. Paul's Ecclesiological Society.—Visit to St. Paul's Cathedral. 2·30 p.m.

St. Chad's Church, Everton.—Referring to the illustration and notice *re* St. Chad's Church, in our issue of the 3rd inst., we are asked to mention that the red bricks and terra cotta used were supplied by Messrs. Monk & Newell.

Miscellanea.

Glasgow International Exhibition.—The various works contracts of the Glasgow Exhibition, even having regard to the fact that the opening day is now little more than six weeks ahead, are, on inspection, found to be well advanced; all of them, and the interior, is already filling with exhibits. Outside, rising above some old growing timber which relieves the rather abrupt slope between the Kelvin and the University, is very prominently seen the bulk of the Bishop's Palace, now all but finished in the externals. This simulation of the ancient building, which formerly adjoined the cathedral, proves to be loftier and much more imposing than had been generally expected, and it promises to be remarkably effective as a feature. Indeed, the Exhibition will be exceptionally strong in extraneous attractions of the higher sort. A few hundreds of yards from the palace, and forming the entrance or gateway to the University grounds, stands the seventeenth-century frontage work of the old College, two years ago removed from the original High-street site and erected here as a substantial memorial. Then, bard by, on the crest of the hill, is the great cluster of the modern University itself. These, although in point of origin not at all connected with any movement of the exhibition kind, will, over the whole of this summer, rank as adjuncts to the central attraction, being virtually within the grounds temporarily placed at the disposal of the executive council. The deepening of the Kelvin has been successfully accomplished, and the sheet of placid river water which now borders the front of the building will begin shortly to receive its quota of floating exhibits, together with the small craft, electrically propelled and otherwise, which are to ply up and down upon it. Over a considerable portion of its area the Park is undergoing extensive surface alterations for purposes of improved approach and more effective horticultural display, but these for the most part will be allowed to remain in permanency. The tramway system has been drawn in upon the various entrances as close as was deemed prudent in the interests of the general traffic, and this subsidiary portion of the undertaking is also already almost touching the point of completion. Exclusive of the men and women's industrial section, the list of exhibitors includes rather over 1,400 names, and the number of courts supplying accommodation for the stands and cases belonging to these reach a total of thirty-seven.

Presentation to Mr. E. F. Wyman.—On Saturday, March 10th, a presentation was made to Mr. Edward Franck Wyman (of the firm of Wyman & Sons, printers of the *Builder*) in celebration of his silver wedding day, the heads of departments and a number of the *employés* who had been longest in the firm's service presenting him with a solid silver drinking-cup and salver, together with a congratulatory address. The presentation was made in the presence of the donors (some sixty in number), by Mr. John Bate, the head reader, whose service with the firm extends over a period of forty years, while many others of those present have been in the employ of Messrs. Wyman & Sons for from thirty to fifty years. In making the presentation, Mr. Bate, in feeling terms, referred to Mr. Wyman's long connexion with the business, and to the uniform kindness and courtesy by which he had endeared himself to every member of the staff, and won their respect and esteem. Mr. Wyman warmly thanked those present for the handsome gift and for the complimentary tone of the address, and acknowledged the faithful service of those around him, by which alone, he added, it had been possible for him to maintain the reputation which had been long attached to their old-established printing-house.

Bourne Waterworks, Lincolnshire.—An overflowing spring has been tapped, by means of an artesian bored tube-well, at a depth of 99 ft. from the surface, in the oolite formation. The quantity yielded is 290,000 gallons a day, through a 5-in. tube. It is stated that this town is the only one in the United Kingdom which gets its supply direct from the source without pumping. Special means have been taken for the safe exclusion of the upper springs, which are badly contaminated and of a chalky nature. The works have been carried out by Messrs. C. Isler & Co., of Southwark-street.

Sale of Building Sites in South London.—On Thursday, the 8th inst., Mr. Stimson offered for sale, at the Auction Mart, by direction of the Metropolitan Board of Works, five extensive freehold building sites, situated in Lambeth, Newington, and Greenwich. The property offered, as to four of the lots, comprised the lands which have been acquired by the Metropolitan Board under the Artisans' and Labourers' Dwellings Improvements Acts, in connexion with the Windmill-row, New Cut, Lambeth, scheme; the Tabard-street, Newington, scheme; and the Trafalgar-road, Greenwich, scheme. A condition of sale as regarded the whole of these lots was that artisans' dwellings alone are to be erected on all of them. The first lot submitted consisted of a site near the New Cut and Waterloo Railway Station, containing an area of 17,000 ft., and having three frontages of 267 ft., 80 ft., and 49 ft. respectively. There was an active competition for this lot, which was sold for 3,050*l.*, being at the rate of 7,900*l.* an acre. The stipulations provided that the buildings to be erected on the site shall have accommodation for 459 of the working classes, and that not less than 12,000*l.* is to be expended in building. The next lot consisted of a plot in Great Dover-street, Tabard-street, and Silvester-street, Newington, containing an area of 10,352 ft., having three frontages of 185 ft., 55 ft., and 53 ft. respectively. It was sold for 4,200*l.*; representing about 17,500*l.* an acre. The stipulations as to the erection of buildings on this lot were rather stringent. The buildings for one-third of their length are to be five stories in height, and for the remaining two-thirds four stories. They are to provide accommodation for 220 persons, and are to cost not less than 6,000*l.* The third lot consisted of a plot in Greenwich, situated on the old Woolwich-road and Lower East-street, and containing an area of 33,460 ft. It was provided that the buildings on this lot were to give accommodation for 380 persons, and that they were not to cost less than 10,000*l.*, but the reserve amount not having been reached the lot was withdrawn. Another plot in Trafalgar-road, Greenwich, also intended for artisans' dwellings, but in respect of which as to cost there were no stipulations, containing 1,749 ft., was sold for 400*l.*; and a plot in Great Dover-street and Tabard-street, Newington, adjoining the plot in that locality already referred to, but in respect of which there were no restrictions as to the class of buildings to be erected upon it, concluded the sale. It contained 8,320 ft., and was sold for 5,700*l.*

St. Bartholomew's Hospital Surveyorship.—At a special meeting of the Governors of this Hospital held on Thursday, Mr. E. Blakeway I'Anson, M.A., was elected Surveyor to the hospital in succession to his father, the late Mr. Edward I'Anson, who held the post for many years. A poll was demanded, with the result, we hear, that Mr. I'Anson was elected by a large majority. We congratulate Mr. I'Anson, who has assisted his father in the business of the Hospital for many years.

Barrows & Stewart, Engineers, Banbury.—We are informed by Mr. Barrows that his partner for twenty years, Mr. Stewart, has decided to retire from the firm, and that the business will continue to be carried on by the remaining partner, with the assistance of his son, Mr. A. Murdock Barrows, and other practical engineers, under the style of "Barrows & Co."

The Blue Coat School Site.—In the event of Christ's Hospital being moved into the suburbs, the authorities of St. Bartholomew's Hospital intend purchasing the site, with the view of enlarging the medical school and the nurses' quarters. The governors of the latter institution are prepared to find the money as soon as the future of the Blue Coat School is decided by the Commissioners.—*City Press.*

Lecture on Sculpture.—Mr. MacBride, whose lectures on the Sculpture at the British Museum we have more than once referred to, has been lecturing on sculpture with great success at Bradford. The chief object of the lecture was to give a general idea of how a statue was made, an exposition which appears to have been followed with much interest by the audience.

Appointment.—Mr. Thomas Peto Ward, of Hornsey, has been appointed clerk of works to the various contracts for the Local Board of Health for Edmonton.

Edinburgh Architectural Association.—The usual fortnightly meeting of this Association was held on the 8th inst., the President, Mr. Hippolyte J. Blanc, in the chair. The President at the outset of the proceedings made suitable reference to the late Mr. J. Stuart Burnett, A.R.S.A., and to Mr. C. Leadbetter, architect, both of whom were members of the Association. Mr. W. P. Buchan, of Glasgow, read a paper on "The Prevention of Down Draught in the Ventilation of Churches, Schools, and other Buildings, with a new formula for calculating the sizes of Outlet Pipes and Wind-acting Exhaust Ventilators." Amongst the various causes of draught Mr. Buchan referred to the temporary one of the occupying of churches and other buildings immediately after they were finished and before the plaster on the walls and roof was dry. This caused currents of cold and moisture-laden air to be set up to the discomfort of the sitters. The air of the interior coming in contact with large single-glazed windows was often another cause of draughts being complained of. Down-draughts through fine-looking pretended ventilation openings in the ceiling, but which were only mere holes in the roof with no pipes or means for proper ventilation: Fitting up of wind-acting exhaust ventilators and often in not very good situations, without any provision to prevent down-draught, on the supposition that they really were as entirely free from down-draught as they were often puffed up to be, quite oblivious of the fact that the wind as a motive power is very inconstant, and that changes in the condition of the atmosphere are many and various. As a cure for the evils here alluded to, Mr. Buchan advocated the use of his self-acting anti-down draught and inspection valve-boxes,—a specimen of which he showed,—which, he said, in addition to preventing down-draught, enabled the action of the ventilating apparatus to be easily seen. Another cause of disagreeable draught was the improper way in which fresh air direct from the outside was often admitted as, *e.g.* too near the ceiling and at the tops of windows and in such a way as to be deflected down on the sitters or occupants. Mr. Buchan thereafter explained the basis of his new calculating formula for ventilation. At the close a hearty vote of thanks was accorded to the lecturer.

PRICES CURRENT OF MATERIALS.

TIMBER.	£.	s.	d.	£.	s.	d.
Greenheart, B.G. .....ton	6	10	0	7	15	0
Teak, E.I. .....load	8	0	0	12	10	0
Sequoia, U.S. .....foot cube	0	2	3	0	3	0
Ash, Canada .....load	3	0	0	4	10	0
Birch ,, ...	2	0	0	3	10	0
Elm ,, ...	3	10	0	4	10	0
Fir, Dantsic, &c.	1	10	0	4	0	0
Oak ,, ...	2	10	0	4	10	0
Canada	3	0	0	6	0	0
Pine, Canada red	2	0	0	3	10	0
,, yellow	2	0	0	4	0	0
Lath, Dantsic .....fathom	3	0	0	5	0	0
St. Petersburg	4	0	0	5	10	0
Wainscot, Riga .....log	0	0	0	0	0	0
,, Odessa, crown.....	2	10	0	3	0	0
Deals, Finland, 2nd and 1st...std.	7	10	0	9	0	0
,, 4th and 3rd	6	0	0	8	0	0
Riga	5	10	0	7	10	0
St. Petersburg, 1st yellow	8	10	0	14	0	0
,, 2nd ,, ...	7	0	0	8	0	0
,, white	6	10	0	8	10	0
Swedish	6	15	0	15	0	0
White Sea	7	0	0	16	10	0
Canada, Pine, 1st	16	0	0	24	0	0
,, ,, 2nd.....	10	0	0	15	10	0
,, ,, 3rd, &c.....	7	0	0	9	10	0
,, Spruce, 1st	8	0	0	9	10	0
,, ,, 3rd and 2nd.....	5	0	0	7	0	0
New Brunswick, &c.....	5	0	0	7	0	0
Battens, all kinds	4	0	0	10	10	0
Flooring Boards, sq., 1 in., prepared, First.....	0	8	0	0	11	0
Second	0	6	6	0	7	6
Other qualities	0	4	0	0	6	0
Cedar, Cuba .....foot	0	0	3½	0	0	3½
Honduras, &c.	0	0	3	0	0	3
Australian	0	0	2	0	0	3
Mahogany, Cuba	0	0	4½	0	0	7
St. Domingo, cargo average	0	0	4½	0	0	6½
Mexican ,, ...	0	0	3½	0	0	3½
Tobasco ,, ...	0	0	4	0	0	5
Honduras ,, ...	0	0	4	0	0	5
Maple, Bird's-eye	0	0	5	0	0	7
Rose, Rio .....ton	8	0	0	11	0	0
Bahia.....	7	0	0	9	0	0
Box, Turkey	5	0	0	12	0	0
Satin, St. Domingo .....foot	0	0	5	0	0	9
Porto Rico	0	0	6	0	0	10
Walnut, Italian	0	0	4	0	0	6½
METALS.						
IRON—Bar, Welsh, in London...ton	4	15	0	4	17	6
,, ,, in Wales	4	5	0	4	10	0
,, Staffordshire, London	5	10	0	7	0	0
COPPER—						
British, cake and ingot .....ton	79	0	0	0	0	0
Best selected	80	0	0	0	0	0
Sheets, strong.....	90	0	0	0	0	0
Chili, bars	81	0	0	0	0	0
YELLOW METAL.....lb.	0	0	7½	0	0	7½

METALS (*continued*).	£. s. d.	£. s. d.
LEAD—Pig, Spanish ....ton	14 10 0	0 0 0
English, common brands....	14 15 0	0 0 0
Sheet, English	15 15 0	16 0 0
SPELTER—Silesian, special ....ton	19 10 0	19 15 0
Ordinary brands....	19 5 0	19 7 6
TIN—Banca ....ton	163 0 0	0 0 0
Billiton	163 0 0	0 0 0
Straits	166 10 0	0 0 0
Australian	166 10 0	0 0 0
English ingots	160 0 0	0 0 0
Bars	161 0 0	0 0 0
Refined, in blocks	166 0 0	0 0 0
ZINC—English sheet ....ton	22 0 0	23 0 0

OILS.	£. s. d.	£. s. d.
Linseed ....ton	18 15 0	19 0 0
Cocoanut, Cochin	27 10 0	29 0 0
Ceylon	24 15 0	0 0 0
Palm, Lagos	21 10 0	0 0 0
Rapeseed, English pale	24 5 0	0 0 0
,, brown	22 15 0	0 0 0
Cottonseed, refined	20 10 0	0 0 0
Tallow and Oleine	35 0 0	45 0 0
Lubricating, U.S.	5 0 0	6 0 0
,, refined	5 0 0	12 0 0
TURPENTINE—		
American, in casks ....cwt.	1 8 6	0 0 0
TAR—Stockholm ....barrel	0 15 0	0 15 6
Archangel	0 10 0	0 10 6

COMPETITIONS, CONTRACTS, & PUBLIC APPOINTMENTS.

Epitome of Advertisements in this Number.

COMPETITIONS.

Nature of Work.	By whom required.	Premium.	Designs to be delivered.	Page.
New School Buildings	Guernsey School Com.	10*l.*	April 20th	ii.
Improving and Enlarging Hotel, Bognor	Bognor Hotel Co., Lim.	50*l.*	Not stated ...	viii.

CONTRACTS.

Nature of Work, or Materials.	By whom required.	Architect, Surveyor, or Engineer.	Tenders to be delivered.	Page.
Wrought-Iron Unclimbable Hurdles	Southend Local Board...	P. Dodd	March 20th	ii.
Broken Guernsey Granite	Walthamstow Local Bd.	H. S. Ridings	March 23rd	ii.
Alterations, Villas and Cottages, Twickenham	Mr. Seal....	H. Orme	do.	viii.
Construction of House Connexions	Dorking Local Board...	G. S. Mathews....	March 24th	ii.
Tunnelling, &c., Works	Liverpool Corporation...	G. F. Deacon....	March 26th	ii.
Gymnastic Apparatus for Parks	Met. Board of Works ..	*Official*	March 27th	viii.
Sinking a Deep Well	Enfield L. B. of Health	do.	March 28th	viii.
Broken Guernsey Granite	Grays Thurrock L. B....	do.	do.	viii.
Broken Granite	Ramsey Local Board ...	do.	March 29th	ii.
Alterations to Court House, St. Alban	Hertford Magistrates...	Urban A. Smith	March 30th	viii.
Engineering Works	Battersea P. B. Com. ...	R. Plumbe....	April 4th	ii.
Sluice Cocks, Waste-Water Meters, &c.	Northwich Local Board	H. Bancroft	April 7th	ii.
Pipes for Waterworks	do.	do.	do.	ii.
Fire Brigade Station, Bethnal Green....	Met. Board of Works...	*Official*	April 9th	viii.
Iron Girders for Bridge	Bristol U. S. A.	F. Ashmead	do.	ii.
Station Buildings, Staircase, and Platform Roofing, Birkenhead	G. W. and L. & N. W. Joint Railways ...	*Official*	April 10th	ii.
Hot-Water Heating Apparatus, Glamorgan...	Visitors, C. Asylum.....	do.	do.	viii.
Outfall Sewage Works, Crossness	Met. Board of Works...	do.	April 20th	viii.
Machinery for Precipitation Works, Barking	do.	do.	do.	viii.
Erection of Chapel, Vestries, &c., Hendon ...	Wesleyan Chapel Trus.	Purves & Done....	Not stated...	viii.
Steel Rails, &c.	War Department....	*Official*	do.	ii.
Barracks Buildings, Ely	Salvation Army....	E. J. Sherwood....	do.	ii.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Applications to be in.	Page
Foreman	Tottenhm Local Board...	2*l.* 10s. weekly	March 20th	xiv.
District Superintendent	St. Marylebone Vestry	104*l.*	March 23rd	xv.
Building Inspector	Willesden Local Board	150*l.*	March 27th	xv.
Surveyor of Buildings, Ireland	Civil Service Com.	Not stated	April 5th	xiv.

TENDERS.

[Communications for insertion under this heading must reach us *not later than* 12 *Noon on Thursdays.*]

AXMINSTER. — For the erection of premises at Axminster, Devon, for the Wilts and Dorset Banking Company, Limited. Mr. George Michael Silley, architect, 17, Craven-street, Strand, London :—

C. & A. Hann....	£1,659 0 0
E. T. Hatherley	1,657 0 0
Lye & Son	1,636 0 0
Parsons & Perryman	1,634 10 0
C. Paull	1,568 5 0
H. Parker	1,560 0 0
H. Phillips....	1,507 0 0
E. C. Howell & Sons	1,495 0 0
F. Hill	1,460 0 0
A. Poole....	1,450 0 0
C. Wibley	1,447 10 0
E. J. Symes	1,393 0 0
Newton & Idle	1,369 0 0
G. & H. Marshall....	1,336 15 0
Turner & Skinner....	1,230 0 0

COLCHESTER.—For houses, Myrtle-grove, Military-road, Colchester, for Mr. T. Sadler. Mr. G. H. Page, architect and surveyor, Colchester :—

A. Diss, West Bergholt	£1,620 0 0
C. H. Shepherd, Colchester	1,460 0 0
J. Harden, Colchester	1,439 16 0
W. A. Chambers, Colchester	1,349 0 0
R. Beaumont, Lexden	1,325 0 0
H. Ambrose, Colchester	1,250 0 0
G. Bowles, Colchester (accepted) ...	1,249 0 0

DARENTH (Kent).—For hot water warming apparatus to the workshops of the Asylum and Schools for Imbeciles, Darenth, near Dartford, Kent, for the Metropolitan Asylums Board. Messrs. A. & C. Harston, architects, 15, Leadenhall-street, E.C. Quantities not supplied :—

Bradford & Co., London....	£288 0 0
Drury & Bigglestone, Canterbury	257 0 0
Potter & Son, London	243 0 0
Clements, Jeakes, & Co., London.....	240 0 0
Vaughan & Brown, London	235 0 0
Stidder & Co., London	235 0 0
J. & F. Way, London....	220 0 0
J. Jeffreys, London	212 0 0
Kinnell & Co., London	204 0 0
Selden & Son, London	188 0 0
R. Crane,* 3, Stockwell Park-road.....	188 0 0

* Accepted.

DARENTH (Kent).—For joinery and other fittings at the workshops of the Asylum and Schools for Imbeciles, Drenth, near Dartford, Kent, for the Metropolitan Asylums Board. Messrs. A. & C. Harston, architects, 15, Leadenhall-street, E.C. :—

Lascelles & Co., London	£212 0 0
W. Shurmur, Prospect House, Lower Clapton (accepted)	198 0 0

EAST HORNDON (Essex).—For erecting a public-house and offices adjoining the entrance to the London, Tilbury, & Southend Railway Station, East Horndon, Essex, for Messrs. Ind, Coope, & Co., Limited. Mr. John Hudson, architect, 80, Leman-street, E. :—

W. Gladding, Whitechapel	£1,178 0 0
J. Cross, Hutton	1,007 0 0
Hammond & Son,* Romford.....	996 0 0

* Accepted.

HARROW.—For the erection of a new gun factory. Mr. Christopher M. Shiner, architect, 15, New Broad-street, E.C. :—

H. Drury	£1,007 0 0
Staines & Son	944 0 0
Mills, Brothers....	900 0 0
Potter	883 0 0
W. A. Rhodes	872 0 0

LINGFIELD (Surrey). — For the erection of new infants' schools at Dorman's Land, and additions to Lingfield School, for the Lingfield School Board. Messrs. H. Hardwicke Langston and Wm. Thorold Lowdell, joint architects, 9, Great James-street, Bedford-row, London. Quantities not supplied :—

New Infants' Schools.

Newport & Idle, Clapham	£805 0 0
Peat, Redhill....	708 0 0
Battley, London	694 0 0
Baylis, London....	649 0 0
Foster, East Grinstead	630 0 0
Wells, Reigate	593 0 0
Wallis & Fuller, Lingfield....	589 0 0
Charlwood, Bros.,* East Grinstead ...	519 0 0

* Accepted.

Additions to Lingfield School.

Newport & Idle....	£397 0 0
Peat....	348 0 0
Battley	329 0 0
Wells	315 0 0
Wallis & Fuller	288 0 0
Foster	280 0 0
Charlwood Bros. (accepted)....	269 10 0
Baylis	260 12 0

LEICESTER.—For the construction and delivery of fifteen new railway sanitary wagons, for the Leicester Corporation. Mr. J. Gordon, C.E., Borough Surveyor :—

J. Stableford, Leicester....	£885 0 0
Harrison & Camm, Rotherham	847 10 0
Metropolitan Railway Carriage and Wagon Co., Limited, Birmingham...	847 10 0
Craven, Brothers, Darnall....	825 0 0
Midland Railway Carriage and Wagon Co., Limited, Birmingham	806 5 0
The Trustees of the Late S. J. Claye, Long Eaton (accepted)	760 10 0

LEICESTER.—For the construction of a Macadam road, 1,150 yards long and 15 feet wide, in connexion with the Beaumont Leys Sewage Farm, for the Corporation of Leicester. Plans, specifications, and quantities by Mr. J. Gordon, C.E., Borough Surveyor :—

James Evans, Birmingham	£1,150 0 0
James Dickson, St. Albans	997 7 5
Jno. Smith, Belgrave, Leicester	981 4 8
S. & E. Bentley, Leicester	945 1 1
Holme & King, Liverpool	791 2 0
R. C. Cordon, Nottingham	762 0 0
B. W. Ward,* Whetstone, Leicester	749 0 0

* Accepted.

LONDON.—For building additions and making alterations at Harris's Hotel, St. James's-place, Piccadilly, W., under the superintendence of Mr. R. Dixon Smith :—

Dearing & Son (accepted)....	£1,500 0 0

LONDON.—For alterations, &c., to the Distillers' Arms, Albert Embankment, S.W., for Mr. George Day. Mr. Edward Clark, architect, 432, West Strand, W.C. Quantities by the architect :—

Geo. Smith & Co....	£1,269 0 0
C. Pereira	1,260 0 0
J. L. Green	1,187 0 0
Patman & Fotheringham	1,173 0 0
John Beale....	1,166 0 0
J. O. Richardson	1,124 0 0

LONDON.—For rebuilding No. 266, High Holborn, W.C., for Mr. Odone Clerici. Mr. Edward Clark, architect, 432, West Strand, W.C. Quantities by the architect :—

William Smith	£1,824 0 0
J. P. Ireweeke	1,749 0 0
Patman & Fotheringham	1,663 0 0
Jackson & Todd	1,649 0 0
J. L. Green	1,583 0 0
J. Bradford	1,549 0 0
J. O. Richardson	1,519 0 0
John Beale....	1,425 0 0

LONDON.—For alterations and additions at 304 and 306, Harrow-road, for M.. E. A. Rudd. Mr. Harry E. Pollard, architect :—

David Laing & Son....	£385 0 0
Dixon & Douse....	377 10 0
W. Howard & Co.	372 0 0
H. B. Oldrey....	365 0 0
J. Vears & Co....	358 0 0
T. W. Dexter (accepted)	317 0 0

LONDON.—For underpinning and sundry other works at No. 33, Rosslyn Hill, Hampstead, for Mr. A. R. Bax, Mr. Harry E. Pollard, architect :—

J. Vears & Co. (accepted)	£326 0 0

LONDON.—For the erection of new head-quarters and drill-hall in Farringdon-road, E.C., for the 2nd London Rifles (Lieutenant-Colonel Cantlon commanding). Mr. Alfred J. Hopkins, architect, 27, Mortimer-street, W. Quantities supplied :—

Wagstaff & Son....	£3,637 0 0
W. H. Lascelles & Co.	3,578 0 0
Stubbs....	3,456 0 0
Rhodes....	3,390 0 0
Ashwell	3,376 0 0
Mattock, Bros.	3,368 0 0
Scrivener & Co....	3,341 0 0
Brickell	3,265 0 0
Chappell....	3,260 0 0
G. H. & A. Bywaters	3,236 0 0
W. Downs	3,226 0 0
Patman & Fotheringham	3,163 0 0

LONDON.—For alterations and repairs to the King's Head public-house, Broad-street, Bloomsbury, for Mr. T. E. Smith. Messrs. Wylson & Long, architects :—

Oldrey....	£577 0 0
T. Gregory & Co....	547 0 0
R. S. Parker	491 0 0
J. T. Chappell	487 0 0

LONDON, W.—For repairs and decorations to No. 63, Hereford-road, Westbourne-grove, W., for the trustees of Mrs. Chappell. Mr. H. Riches, surveyor, 59 and 60, Cornhill, E.C. :—

J. Knight,* Westminster	£131 10 0

* Accepted.

LONDON.—For alterations and repairs at Mouflet's Hotel, Newgate-street, for Mr. R. H. Barnes. Mr. H. I. Newton, architect, 17, Queen Anne's-gate, Westminster. Quantities not supplied :—

Lee	£3,097 0 0
Burman	3,085 0 0
Godden	2,967 0 0
Drew & Cadman	2,878 0 0
Jackson & Todd	2,689 0 0
Kirk & Randall (accepted)	2,639 0 0

LONGFORD. — For the erection of stabling, cow-house, piggeries, fowl-house, and greenhouse at Mill Island, Longford, for Mr. W. Chard. Mr. A. Harry Heron, architect, Uxbridge :—

Hardy, Cowley (accepted)....	£430 0 0

[No competition.]

NEWPORT (Mon).—For proposed new Temperance Hall, Dock-street, Newport. Messrs. W. G. Habershon & Fawckner, architects. Quantities by the architects :—

T. C. Jones, Gloucester	£4,273 0 0
Cowlin, Bristol	4,267 0 0
W. Bolt, Newport	4,200 0 0
W. Blackburn, Newport....	3,993 0 0
G. Marshall, Smethwick....	3,917 0 0
J. Linton, Newport	3,900 0 0
Jenkins, Bros., Swansea....	3,900 0 0
E. Turner & Sons, Cardiff....	3,898 0 0
Moulton & Brownscombe, Newport.	3,870 0 0
Shepherd & Son, Cardiff	3,794 0 0
Morgan & Evans, Pontnynndd	3,742 0 0
Wilkins & Martin, Newport....	3,698 0 0
Gradwell, Barrow and Newport	3,695 0 0
C. Miles, Newport	3,698 0 0
H. Parfitt, Cwmbran	3,600 0 0
C. Edwards, Leominster	3,594 0 0
W. Price, Newport (accepted)	3,449 0 0

PLYMOUTH. — For erecting the new Plymouth Borough Asylum. Messrs. Hine & Odgers, architects, Plymouth. Quantities by Messrs. Widnell & Trollope, Westminster :—

		Extra.*
Chappell, Pimlico	£46,768	£120
Kirk & Randall, Woolwich	44,216	90
Shillabeer, Plymouth	44,000	145
Lethbridge & Son, Plymouth	43,654	60
Lapthorne & Goad, Plymouth	38,850	75
Debnam, Plymouth	38,383	200
Reed, Plymouth	38,407	87
Harley, Plymouth	38,200	220
Trevena, Bros., Plymouth	37,654	185
Roberts, Plymouth	37,631	100
Blowey, Plymouth	36,373	350
Tozer & Son, Plymouth	36,493	70
Finch & Son, Plymouth	35,992	98
Trevena, Plymouth	35,597	180
Jon. Marshall, Plymouth	34,973	86
Pethick, Bros.,† Plymouth	34,444	100

* Extra for granite in lieu of concrete staircases.
† Accepted.

TORQUAY.—For the erection of premises in Fleet-street, Torquay, for the Wilts and Dorset Banking Company, Limited. Mr. George Michael Silley, architect, 17, Craven-street, Strand, London. Quantities by Messrs. Fowler & Hugman, 9, Craig's-court :—

Sanders & Son	£5,232	0	0
W. Crocker	4,998	10	0
H. Phillips	4,975	0	0
J. C. Parker	4,849	0	0
E. T. Hatherley	4,837	0	0
F. A. A. Stacey	4,798	0	0
J. T. Chappell	4,769	0	0
W. Trevena	4,698	0	0
J. W. McKellar	4,530	0	0
W. A. Goss	4,494	0	0
Chas. Wibley	4,486	15	0
R. P. Bovey	4,468	0	0
Finch & Son	4,440	0	0
G. H. Marshall	4,395	0	0
Jonathan Marshall	4,349	0	0
W. Gibson	4,240	0	0
Jno. Reed	4,223	0	0
J. H. Foaden	4,190	17	4
R. F. Yeo	4,162	0	0
J. Smerdon	4,150	10	0
Morgan, Isted, & Morgan	4,146	0	0
F. Matthews	3,999	0	0
E. C. Howell & Sons	3,995	0	0
Lapthorne & Goad	3,943	0	0
S. Roberts (too late)	3,725	0	0

WALTON-ON-THAMES.—For building seven houses for Messrs. Dale, at Walton-on-Thames. Mr. A. Pennington, architect :—

W. & A. Brown	£2,930	0	0
Wheatley & Sons	2,815	0	0
T. King	2,735	0	0
Mathews & Mann	2,650	0	0
S. Woods	2,550	0	0
B. Ingram & Co.	2,500	0	0
G. Britton	2,489	0	0
S. Brown	2,187	0	0
Alderton	2,100	0	0
H. Dee	2,081	0	0
Accepted.			
S. Brown, for two pairs	£1,322	0	0
H. Dee, for three houses	757	0	0

WESTMINSTER.—For intended works, 2 and 3, Great College-street, Westminster, for the Lancashire and Yorkshire Railway Co.'s offices. Mr. Shelmerdine, architect :—

F. Anear, Wood-street, Westminster	£217	8	6

YEOVIL.—For alterations and additions to the premises of the Wilts and Dorset Company, Limited. Mr. George Michael Silley, architect, 17, Craven-street, Strand, London :—

E. C. Howell & Sons	£1,300	0	0
E. T. Hatherley	1,297	0	0
Cox	1,195	0	0
C. Paull	1,184	10	0
G. H. Marshall	1,167	0	0
Chas. Wibley	1,148	10	0
Davis & Co.	1,137	14	6
E. R. Bartlett	1,136	0	0
Scott & Mitchell	1,080	0	0
A. Poole	1,070	0	0
Newton & Idle (too late)	953	0	0

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All statements of facts, lists of tenders, &c., must be accompanied by the name and address of the sender, not necessarily for publication

We are compelled to decline pointing out books and giving addresses.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

We cannot undertake to return rejected communications.

Letters or communications (beyond mere news-items) which have been duplicated for other journals, are NOT DESIRED.

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